Title: Prejudice towards People with Mental Illness: Measurement, Structure, and Antecedents in Mental Health Professionals and the General Population

Short Title: Prejudice towards People with Mental Illness

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Abstract

This study sought to create and validate a shortened version of the promising Prejudice towards People with Mental Illness (PPMI) scale and use it to measure and compare prejudiced attitudes in mental health professionals and in the general population. An additional goal was to examine the antecedents to prejudice towards people with mental illness. An online survey collected information regarding: demographics; mental health professional-related variables; prejudiced attitudes towards people with mental illness generally and towards people with schizophrenia and depression; and a number of proposed antecedents to prejudice. The proposed antecedents were constructs known to correlate with other forms of prejudice, such as racism and religious intolerance. These were: social dominance orientation; right wing authoritarianism; ethnocentrism; feelings towards other marginalised groups; personality traits of agreeableness and openness to experience; prior contact with people with mental illness; and political ideology. Four hundred and twenty-seven participants from the general population and 299 mental health professionals completed the survey. The shortened scales demonstrated construct validity through factor analysis and convergent validity through correlations with theoretically related variables in both groups. Mental health professionals demonstrated less prejudice overall than the general population. Attitudes in both groups were most negative towards people with schizophrenia and least negative towards people with depression. All proposed antecedents were correlated with prejudiced attitudes. These antecedents were also better predictors of prejudice than were any demographic or profession-related variables examined.

Keywords: Mental Illness; Prejudice; Stigma; Attitudes; Mental Health Professionals; Scale Construction and Validation; Psychometrics/Methods

Prejudice towards People with Mental Illness: Measurement, Structure, and Antecedents in Mental Health Professionals and the General Population

People with mental illness (MI) are often the target of stigma, leading to a multitude of negative outcomes including poorer physical health, fewer job and educational opportunities, worsening of mental health symptoms, social isolation, and loss of self-worth (Corrigan & Kleinlein, 2005; Link & Phelan, 2006). In addition to the cost to individuals, stigma towards people with MI leads to substantial costs to society through reduction in economic and social contribution and greater strain on the health system (Sharac, Mccrone, Clement, & Thornicroft, 2010). Stigma shared by mental health professionals (MHPs) can have a particularly damaging impact upon treatment-seeking and effective provision of treatment (Jorm, Korten, Jacomb, Christensen, & Henderson, 1999; Schulze, 2007; Wahl, 1999).

Stigma can be broken down into three components: stereotypes, prejudice and discrimination (Corrigan & Shapiro, 2010; Rüsch, Angermeyer, & Corrigan, 2005). A stereotype exists where certain attributes are linked to a subgroup of people by the dominant culture. These attributes may be positive or negative and may or may not be endorsed by a particular individual. As such, a person may have knowledge of a stereotype without sharing the associated beliefs themselves. Awareness of stereotypes may also be referred to as 'perceived stigma' (Corrigan, Watson, & Barr, 2006). Prejudice involves personally holding negative attitudes towards particular out-groups and might also be referred to as 'personal stigma' or 'public stigma' (Corrigan & Watson, 2002; Griffiths, Christensen, Jorm, Evans, & Groves, 2004). The terms 'prejudice' and 'negative attitudes' will be used interchangeably throughout this discussion. Discrimination is behaviour, it refers to the negative differential treatment of a person based on their membership of a group. Although stereotypes are important in understanding the content of prejudiced attitudes, they are less likely to lead directly to discrimination, which is instead better predicted by prejudice (Thornicroft, Rose,

Kassam, & Sartorius, 2007). As addressing prejudice directly is essential to preventing discrimination it will be the component of stigma that is the focus of this paper. However, it is generally stigma as a whole, rather than its various components, that is studied in relation to people with MI. As such, stigma research will be referred to in the absence of prejudice-specific research, with an emphasis on studies or elements of studies that examine negative group-based attitudes (a common definition of prejudice; Stephan & Stephan, 2000). Despite a multitude of stigma-reduction campaigns, an increase in public knowledge about mental illness, and a greater acceptance of mental health treatment, prejudiced attitudes towards people with MI have remained stable or even worsened over the last two decades, demonstrating the ineffectiveness of current approaches (Schomerus et al., 2012). In order to effectively tackle prejudice we must first be able to accurately measure it, know the specific attitudes that comprise it, know its prevalence, and understand the factors that lead to it.

Measurement of Prejudice towards People with MI

A number of scales which measure negative attitudes towards people with MI are available, however, no existing scales have proven sufficiently statistically and theoretically robust to establish themselves as valid measures. Many commonly used measures do not meet accepted standards for psychological scale construction, have non-replicable factor structures or use language that is overly complex for the general population (e.g., Baker & Schulberg, 1967; Cohen & Struening, 1962; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Link, 1987; Taylor & Dear, 1981). The use of poor psychometric practices such as including double-barrelled items (items relating to multiple ideas but allowing only one answer) and using only ‘rational’ methods (intuitively choosing items on face value) for item inclusion are common amongst popular measures (e.g., Baker & Schulberg, 1967; Cohen & Struening, 1962; Day, Edgren, & Eshleman, 2007; Griffiths, Christensen, Jorm, Evans and Groves, 2004; Hirai & Clum, 2000; Singh, Baxter, Standen, & Duggan, 1998;

Taylor & Dear, 1981). Acquiescence response bias is known to be an important consideration in data gathered via survey (e.g., Benson, Garrison, Dropkin, & Jenkins, 2016; Jackman, 1973; Kam & Meyer, 2015; Ray, 1983) and failing to address this by including both positive and negatively worded items can lead to artificially high correlations between constructs as acquiescence generalises across measures (Ray, 1982). Despite this, many scales in this field include only positively worded items (e.g., Griffiths, Christensen, Jorm, Evans and Groves, 2004; Kobau, Dilorio, Chapman, & Delvecchio, 2010). Additionally, scales often lack clarity regarding the target of attitudes. For example, scales may conflate prejudiced attitudes towards individuals with MI (e.g., "Patients in mental hospitals are in many ways like children") with other types of attitudes or opinions, such as towards methods of treatment (e.g., "Our mental hospitals seem more like prisons than like places where mentally ill people can be cared for") or sources of illness (e.g., "The mental illness of many people is caused by the separation or divorce of their parents during childhood"; Cohen & Struening, 1962). Others combine personal views (e.g., "I would be comfortable about inviting John to a dinner party") with beliefs about the views or behaviour of others (e.g., "Do you think that this would damage John's career?"; Luty, Fekadu, Umoh, & Gallagher, 2006) into a single scale, failing to distinguish between them, or include questions about prejudiced attitudes and questions about intended discrimination in unitary scales (Griffiths, Christensen, Jorm, Evans and Groves, 2004).

Studies addressing prejudice towards people with MI generally agree that prejudice is multidimensional, and a number of themes have emerged. These include: perceived dangerousness and unpredictability; deservingness of treatment or welfare; blameworthiness; need for restriction of rights; defectiveness; and desire for social distance (e.g., Caldwell & Jorm, 2001; Grausgruber, Meise, Katschnig, Schony, & Fleischhacker, 2007; Kingdon, Sharma, & Hart, 2004; Schulze, 2007). Despite the multitude of attitudinal components

which have been measured, there is no current consensus as to which key domains comprise prejudice towards people with MI, with scales including widely disparate factors. At times components which have been proposed as distinct have been found in factor analysis to reflect a single concept, for example authoritarianism and social restrictiveness in the Community Attitudes toward the Mentally Ill scale (Taylor & Dear, 1981). Determining the key components of attitudes is thus an essential next step in effective research on prejudice towards people with MI.

Prejudice in MHPs and the General Population

Despite the ongoing lack of effective measurement tools, stigma towards people with MI has received increasing attention in recent decades. However, the majority of studies have looked at the general population, with only a small number examining attitudes of MHPs specifically, usually making comparisons with public stigma. Two reviews of stigma in MHPs have been conducted to date, one by Schulze in 2007 and one by Wahl and Aroesty-Cohen in 2010, as well as a handful of additional studies since (e.g., Hansson, Jormfeldt, Svedberg, & Svensson, 2013; Reavley, Mackinnon, Morgan, & Jorm, 2014). Findings have been mixed, with just under half of all studies indicating that the views of MHPs are similar to or even more negative than those of the general population and just over half indicating MHPs have overall more positive attitudes. These studies have included a number of aspects of stigma other than prejudice, such as stereotype knowledge, beliefs about value of various treatments and prognosis, and beliefs about the likelihood of discrimination from others. Of those studies addressing prejudice, MHPs had positive attitudes more often than the public, though some differences emerged across different attitudinal dimensions. Professionals generally had similar views to the public on desire for social distance and perceptions of unpredictability but less endorsement of restriction of civil rights and perceptions of dangerousness, blameworthiness and weakness (Schulze, 2007; Wahl & Aroesty-Cohen,

2010). Studies have not generally examined whether the content of attitudes is different between MHPs and the general population, but have rather looked at the degree to which attitudes are endorsed.

Differences between types of professionals and types of disorders were apparent in several studies. Psychiatric nurses have generally been found to have more negative views than other professionals (Foster & Onyeukwu, 2003; Magliano, Fiorillo, De Rosa, & Malangone, 2004), though some studies have found psychiatrists to hold the most prejudiced attitudes amongst MHPs (Caldwell & Jorm, 2001; Lauber, Nordt, Braunschweig, & Rossler, 2006; Nordt et al., 2006). Psychologists generally have more positive attitudes (Gilchrist et al., 2011; Jorm et al., 1999). Most studies have looked at schizophrenia or generic 'mental illness' alone, however, of those studies including more than one diagnostic label or vignette, attitudes tend to be more negative towards people with substance use disorders, schizophrenia and borderline personality disorder than towards people with depression and social anxiety disorder (Deans & Meocevic, 2006; Fraser & Gallop, 1993; Jorm et al., 1999; Newton-Howes, Weaver, & Tyrer, 2008; Ross & Goldner, 2009). Theoretically, one might expect to see differences according to workplace setting, with those working in hospitals having more negative attitudes as a result of working with more severely affected patients. Few studies have addressed this question and results have been mixed, with no overall differences in personal prejudice found according to workplace setting (Hugo, 2001; Lauber et al., 2006), but an increased tendency found in professionals in inpatients wards to believe 'most people' would have negative attitudes towards people with mental illness compared to professionals in outpatient wards (Hansson et al., 2013).

Research to date has looked at a limited range of correlates of attitudes towards people with MI, generally confined to demographic factors and prior contact. Prior contact has shown reasonable predictive value for lower prejudice towards people with MI, as is the case

for other forms of prejudice, such as negative attitudes based on ethnicity, religion or sexuality (Angermeyer, Matschiner, & Corrigan, 2004; Couture and Penn 2003; Dovidio, Love, Schellhaas, & Hewstone, 2017; Kolodziej and Johnson 1996; Alexander & Link, 2003). In MHPs, professional contact is also predictive of lower stigma, with professionals who spend more of their work life in direct contact with people with MI generally expressing more positive attitudes (Brener, Von Hippel, & Kippax, 2007; Ding, Landon, Wilson, Wong, Shapiro, & Cleary, 2005). Demographic variables have proven less reliable, with no consistent findings regarding age, gender, education and race (Angermeyer & Dietrich, 2006; Gilchrist et al., 2011; Jorm et al., 1999; Reaveley et al., 2014). Where demographic variables are significant, the most common findings are that older age, male gender, less formal education, and being 'non-white' predict greater stigmatising attitudes (e.g., Angermeyer & Dietrich, 2006; Chambers et al., 2010; Hayward & Bright, 1997; Reavely et al., 2014; Schafer, Wood, & Williams, 2011).

The Prejudice towards People with Mental Illness Scale

In response to limitations of existing measures, Kenny, Bizumic and Griffiths (2018) developed the Prejudice towards People with Mental Illness (PPMI) scale. This scale demonstrated a solid statistical and theoretical foundation, including in methods of item selection and scale validation. In the initial development of the PPMI, a thematic analysis was performed on the items in 27 scales measuring stigma towards people with MI. Three experts in mental illness and scale construction gave ratings on a pool of 179 items. Seven themes relating to attitudes towards people with MI were identified in this process (dangerousness, unpredictability, authoritarianism, inferiority, social distance, interaction difficulty, & malevolence) and the 68 items which best reflected these themes (e.g., dangerousness; 'I think people with mental illness often pose a risk to other people') were selected. Confirmatory factor analysis indicated that these 7 themes did not hold together as factors.

Exploratory factor analysis was thus conducted on a sample of 301 participants and revealed a four-factor structure comprised of fear/avoidance (belief in dangerousness of people with MI and desire for social distance from them), unpredictability (belief that the behaviour of people with MI is unpredictable), authoritarianism (belief in the need to coercively control people with MI) and malevolence (belief in the inferiority of people with MI and lack of sympathy for them). A balanced (equal numbers of positive and negative items) scale was created with the 28 items that best reflected the four factors. A second study was conducted (Kenny et al., 2018) in which the 28-item PPMI was administered to a sample of 168 undergraduate students. Confirmatory factor analysis found acceptable fit for the four-factor structure, providing evidence of construct validity, and the full scale and subscales all had adequate internal consistency reliability. In a third study in the same paper, Kenny and colleagues (2018) showed further evidence of construct and convergent validity through successful factor analysis and correlations with theoretically related variables in a sample of 495 participants recruited online.

Kenny and colleagues (2018) were also the first to examine a number of constructs which correlate with prejudice towards other marginalised groups in relation to prejudice towards people with MI. These included empathy, Big Five personality traits, right wing authoritarianism (RWA; a personal ideology valuing conventionalism, conformity, submission to authority and aggressive authoritarian strength; Altemeyer, 1998) and social dominance orientation (SDO; a personal ideology involving belief in superiority of one's own group and desire for its dominance over other groups; Sidanius & Pratto, 2001) in addition to prior contact, all of which significantly predicted attitudes on the PPMI. Intriguingly, they found that the variables that best predicted prejudice were SDO and RWA, as is the case with attitudes towards other groups such as immigrants, homosexuals and racial or ethnic groups (Altemeyer, 1998; Hodson & Esses, 2005). Further, the PPMI was correlated with measures

of past discriminatory behaviour and behavioural intentions, suggesting it may predict real-world discrimination. Finally, it did not correlate with measures of social desirability, indicating it is relatively free of desirability response bias.

In a further study by Gunningham and Bizumic (2018) the PPMI was adapted to create two new scales, the Prejudice towards People with Schizophrenia (PPS) and Prejudice towards People with Depression (PPD) scales. Schizophrenia and depression were selected as they are the most common mental illnesses targeted by stigma research and levels of prejudice are different towards each (Angermeyer & Dietrich, 2006). They are well recognised disorders and are more reliably perceived as mental illness than, for example, substance use disorders and anxiety (Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999). The PPMI, PPS and PPD were validated through factor analysis and positioning within a network of theoretically related constructs. In a sample of 406 participants, the PPMI's four-factor structure was replicated for attitudes towards people with MI and was successfully applied to attitudes towards people with schizophrenia and depression. Measurement invariance analyses demonstrated that the scales measured the same construct across the three disorder types, indicating that prejudiced attitudes towards each group differed in degree but not in type. In correlational analyses, the proposed antecedents of SDO, RWA, empathy, agreeableness and openness to experience, disgust sensitivity (previously found to predict prejudice towards other groups; Hodson & Costello, 2007) and prior contact significantly correlated with prejudiced attitudes towards people with MI, schizophrenia and depression. No demographic variables correlated with attitudes towards any of the three groups. Interestingly, mean attitudes towards people with MI fell almost precisely halfway between mean attitudes towards depression (least negative) and schizophrenia (most negative), indicating that people use an amalgam of the spectrum of disorders when considering MI in general.

These promising scales have yet to be used to assess the attitudes of MHPs and indeed have yet to be validated for this use. Their superior psychometric properties and demonstrated validity will likely make them useful tools for examining prejudiced attitudes and their antecedents in MHPs and comparing them to those of the general population. However, it is important that these scales be separately validated with this group as it is possible that the content of prejudiced attitudes or their structure (e.g., the fear and avoidance items forming a single factor versus separate factors) might be different in MHPs from the general population. In addition, despite their demonstrated strengths, the current length of the PPMI, PPS and PPD makes them somewhat cumbersome to include in studies where prejudice is not the primary focus or where researchers wish to examine attitudes towards a range of disorders. Short, psychometrically sound scales would therefore be desirable for research on current levels of prejudice, for assessing the outcomes of interventions or changes in attitudes over time, or perhaps for use in workplaces. The work of Kenny and colleagues (2018) and Gunningham and Bizumic (2018) was the first to extend beyond contact and demographics to examine the multitude of variables which are known correlates of prejudice towards other groups. Expanding our understanding of the relationship of a wider range of correlates of prejudice, such as political ideology, ethnocentrism (preference for and belief in the superiority of one's own ethnic group; Bizumic & Duckitt, 2012) and generalised prejudice (the concept that individuals who are prejudiced towards one outgroup are likely to be prejudiced towards others; Allport, 1954), with attitudes towards people with MI in both MHPs and the public would assist in deepening our knowledge and allowing us to apply the wider lessons of prejudice research to tackling negative attitudes towards people with MI.

Aims and Hypotheses

The present study aims to: develop shortened versions of the PPMI, PPS and PPD; to evaluate the validity and psychometric properties of these shortened measures, particularly in

MHPs; to compare levels of prejudice between the general population and mental health professionals; and to expand our understanding of correlates of prejudiced attitudes towards people with MI. Our hypotheses are as follows:

H1: The shortened measures will demonstrate adequate validity in MHPs and the general population;

H2: The four-factor attitudinal structure of prejudice, comprising fear/avoidance, unpredictability, authoritarianism and malevolence, will be replicated in both MHPs and the general population towards people with MI, schizophrenia and depression;

H3: The attitudes of MHPs will be less prejudiced, on average, than those of the general population;

H4: Prejudice will be lower towards people with depression than towards people with schizophrenia;

H5a: Prejudiced attitudes in both groups will be related to known correlates of prejudice: low openness to experience, agreeableness and prior contact, and high SDO, RWA, ethnocentrism, generalised prejudice and conservative political ideology;

H5b: These correlates will better predict prejudice than will demographic variables; and

H6: The attitudes of MHPs will be influenced by profession type and amount of contact with people with MI within the workplace.

Method

Participants

A sample of 427 participants from the general population was recruited through online forums, psychology research websites, social media and word of mouth. A second sample of 299 mental health professionals was recruited through the means above and via professional association newsletters and websites, mailing lists and individual emails obtained through online professional listings. Demographic characteristics can be seen in Appendix A1. The samples differed significantly on all demographic variables other than economic situation, with MHPs being older, more educated and more likely to be female, to be white, and to speak English as a primary language than the general population. Psychologists made up the largest proportion of MHPs (67%), with the remainder identifying that they were psychiatric nurses, psychiatrists, mental health social workers and 'other' mental health professionals (Appendix A2).

Creating Shortened Measures

Three abbreviated 16-item scales (PPMI-SV; PPS-SV; PPD-SV) were derived from the original 28-item scales using an automated genetic algorithm method devised by Yarkoni (2010) was used in Python to abbreviate scales. A detailed explanation of this method is beyond the scope of the current paper, for a full description see Yarkoni (2010). This method avoids common errors in shortening scales, such as maximizing internal consistency by selecting similar items rather than covering the full breadth of the original domain (Smith, McCarthy, & Anderson, 2000), and instead captures the variance of the longer measure with minimal loss of accuracy. Although this method leads to a truer representation of the original scale, this higher validity often comes at the cost of internal consistency (Yarkoni, 2010).

This is particularly the case for short or heterogeneous measures, where Cronbach's alpha is already a poor estimate of reliability (Cronbach, 1951).

The abbreviation process was conducted using data from Gunningham and Bizumic's (2018) study of 406 participants from the general population. Each shortened scale was comprised of four 4-item subscales of fear/avoidance, unpredictability, authoritarianism and malevolence. The items from the shortened measures can be found in Appendices B1 to B3. Internal consistency reliability for the full scales was acceptable, however, Cronbach's alphas for subscales were at times below acceptable levels, particularly in the MHP group (Table 1). The malevolence subscale did not achieve acceptable internal consistency in either group. McDonald's Omega reliabilities (Dunn, Baguley, & Brunsden, 2014) were examined but are not presented or discussed as they were not substantially different from alpha values. Cronbach's alphas from Kenny and colleagues' (2018) original study of the 28-item scale can be seen in Appendix A3, where the scale and all subscales achieved adequate internal consistency. To ensure the shortened scales were capturing the same data as the full scales, correlations between the full and shortened versions were obtained from Gunningham and Bizumic's (2018) data. Correlations were extremely high for the total scales and subscales, ranging between $r = .91$ and $r = .99$ (Appendix A4).

Table 1.

Cronbach's Alpha Coefficients for the PPMI-SV, PPS-SV and PPD-SV Scales and Subscales

		Full-SV Scale	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
PPMI	MHPs	.76	.54	.66	.62	.47
	GenPop	.86	.80	.81	.75	.59
PPS	MHPs	.80	.73	.77	.63	.36
	GenPop	.88	.89	.82	.80	.52
PPD	MHPs	.77	.54	.79	.61	.47
	GenPop	.83	.73	.82	.72	.54

Note. N = 299 Mental Health Professionals (MHPs), N = 427 General Population (GenPop).

Materials and Procedures

Participants completed an online survey consisting of measures of demographic and profession-related variables, prejudiced attitudes towards people with MI, schizophrenia, and depression, and proposed antecedents to prejudice. Measures appeared in this order except that the order of questions regarding schizophrenia and depression was randomised. All participants were asked if they were MHPs regardless of recruitment method to ensure no MHPs were included in the general population sample. Ethics clearance was provided by the relevant ethics committee. Participants were provided with information about the study before consenting to take part and helpline numbers and links to websites were provided in the unlikely event of distress caused to participation.

Prejudice towards people with MI, schizophrenia and depression. The 16-item PPMI-SV (α = .76 MHPs/.86 general population), PPS-SV (α = .80/.88) and PPD-SV (α = .77/.83) scales were used to measure prejudice towards people with mental illness, schizophrenia and depression. Prejudiced attitudes were measured on a 9-point Likert-type

scale ranging from -4 (*very strongly disagree*) through 0 (*neutral*) to +4 (*very strongly agree*).

Generalised Prejudice. Generalised prejudice was measured using a 'feeling thermometer' (α = .93/.91), where participants were asked to rate their feelings towards a range of groups including immigrants, feminists and Muslims on a scale of -50 (most negative) to +50 (most positive). Responses were treated as continuous rather than categorical. Feeling thermometer scales are commonly used in assessing prejudice and correlate with other explicit and implicit measures of prejudice (e.g., Dasgupta, McGhee, Greenwald, & Banaji, 2000; Rudman, Ashmore, & Gary, 2001; Wittenbrink, Judd, & Park, 2001).

SDO, RWA and Ethnocentrism. SDO was measured with a shortened balanced 6-item (α = .69 /.79) measure comprised of items taken from Sidanius & Pratto's (2001) 16-item SDO-6. RWA was measured using a shortened balanced 6-item (α = .76/.80) version of Duckitt and Bizumic's (2013) Authoritarianism-Conservatism-Traditionalism scale, which includes two items measuring each dimension of RWA (Bizumic & Duckitt, in press). Ethnocentrism was measured using a shortened 6-item (α = .57/.69) version of Bizumic, Duckitt, Popadic, Dru and Krauss' (2009) Ethnocentrism Scale (Bizumic, in press). SDO, RWA and ethnocentrism were measured on 9-point Likert-type scales ranging from -4 (*very strongly disagree*) to +4 (*very strongly agree*).

Political Ideology. Political ideology was measured on a seven-point scale from 'strongly liberal' to 'strongly conservative'.

Big Five personality traits. The Big-Five personality traits of agreeableness (α = .58/.83) and openness to experience (α = .70/.76) were measured using four items each from

the 20-item version (Mini-IPIP) of the 50-item International Personality Item Pool – Five Factor Model (IPIP-FFM; Donnellan, Oswald, Baird, & Lucas, 2006; Goldberg, 1999).

Contact. Contact was measured with three near-identical items asking how often participants interact with someone who currently has 'a mental illness', 'schizophrenia', or 'depression'. Responses were on a six-point scale ranging from 'never' to 'daily'.

Attention checks. Three attention checks were included (e.g., "to respond to this question, please select option 5, 'neutral'"). Additionally, at the end of the survey a question was included asking how carefully participants read and responded to questions.

Results

Data Cleaning

Of the 1050 participants starting the survey, 315 participants were removed due to not completing, five were removed for reporting they had not read questions carefully and four were removed for failing multiple attention checks. Of the incomplete responses, 62 were MHPs, 192 were not MHPs and 61 did not reach this question. Demographic variables were not significantly different between participants whose data was retained or removed. Though there were several outliers on individual scales, no multivariate outliers were identified using Mahalanobis distance values and so no data was removed on this basis. Due to the forced-choice survey design (i.e., participants could not move to the next page without answering all questions), no data from retained participants was missing.

Confirmatory Factor Analysis

The hypothesised correlated four-factor structures of the PPMI, PPS and PPD were examined using an R package for structural equation modelling (*lavaan;* Rosseel, 2011). In addition to the four attitudinal factors an uncorrelated 'method factor', which included all reverse-coded items, was added to account for variance due to testing method (e.g., Cole,

1987; Floyd, 1995). This factor does not represent a domain of prejudice and is not scored separately. Item-level confirmatory factor analysis (CFA) was conducted. There is no established 'golden rule' for assessing good fit (Hu & Bentler, 1999). Tabachnick and Fidell's (2001) guidelines regarding fit indices were followed as they are less likely to result in rejection of good but complex models (Perry, Nicholls, Clough, & Crust, 2015). These guidelines state that a model has good fit if CFI and TLI > .90, RMSEA is < .08 with the upper bound of the 90% confidence interval not exceeding .10, and SRMR is < .08. For complex models, a χ^2 to *df* ratio of less than 2 indicates good fit, and a ratio between 2 and 3 indicates acceptable fit (Bollen & Long, 1993). As seen in Table 2, acceptable fit, with no re-specification, was found for the proposed model in both MHPs and the general population for all three scales, supporting hypotheses one and two. Visual representations of the correlated four-factor structure can be seen in Appendices B5 to B7. All items loaded significantly on their corresponding factors and all but four items across the six CFAs had loadings at .3 or above on their proposed factors (Tabachnich & Fidell, 2007; Appendices B1-B3). Two items on the PPMI had lower loadings in the MHP sample only. These were 'I would feel relaxed if I had to talk to someone who was mentally ill' which had a loading of .20 on fear/avoidance (p = .007) and 'people who become mentally ill are not failures in life' which had a loading of .25 of malevolence (p = .001). The PPS had one low loading in the MHP sample ('people who become schizophrenic are not failures in life'; loading .20 on malevolence, p = .01) and one in the general population sample ('people with schizophrenia should support themselves and not expect handouts'; loading .25 on malevolence, p < .001). For comparison, CFA was run for a unidimensional model in which all items loaded onto a single factor. The unidimensional model had unacceptable fit in all scales and samples (Appendix B4) and had substantially worse fit than the proposed model.

Table 2.

Fit Indices of Confirmatory Factor Analysis

	χ^2	*df*	*p*	χ^2:*df* ratio	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR
PPMI									
MHPs	154.18	90	<.001	1.71	.93	.90	.049	.03-.06	.047
GenPop	233.81	90	<.001	2.56	.94	.92	.061	.05-.07	.053
PPS									
MHPs	136.28	90	<.001	1.51	.95	.94	.021	.03-.05	.051
GenPop	199.49	90	<.001	2.22	.96	.95	.052	.04-.06	.050
PPD									
MHPs	128.03	90	<.01	1.42	.95	.94	.038	.02-.05	.046
GenPop	210.92	90	<.001	2.34	.94	.92	.056	.05-.07	.047

Note. N = 299 for mental health professionals and 427 for the general population.

Comparison of Mean Attitudes towards People with MI, Schizophrenia and Depression

A one-way MANOVA was conducted to determine whether there were significant differences between mean prejudiced attitudes in the general population and MHPs (Appendix C1). The attitudes of MHPs were significantly more positive overall towards people with MI, schizophrenia and depression ($p < .01$), supporting hypothesis three. MHPs were also significantly more positive on each attitudinal factor for prejudice towards people with MI and schizophrenia and on the attitudinal factors of unpredictability and malevolence towards people with depression ($p < .01$). However, MHPs' attitudes were not different from the general population on dimensions of fear/avoidance or authoritarianism towards people with depression. Visual representations of these differences can be seen in Figures 1 to 3.

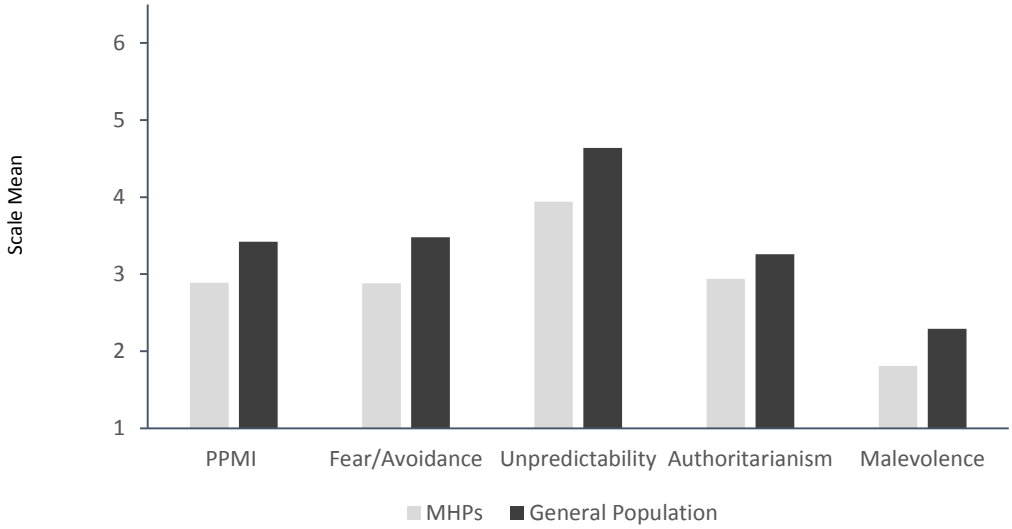

Figure 1. Mean prejudiced attitudes of mental health professionals (MHPs) and the general population towards people with MI. Attitudes were measured on a 9-point Likert-type scale ranging from 1 ("very strongly disagree") to 9 ("very strongly agree"). *N* = 299 for MHPs, *N* = 427 for general population. PPMI = Prejudice towards People with Mental Illness scale; PPS = Prejudice towards People with Schizophrenia scale; PPD = Prejudice towards People with Depression scale.

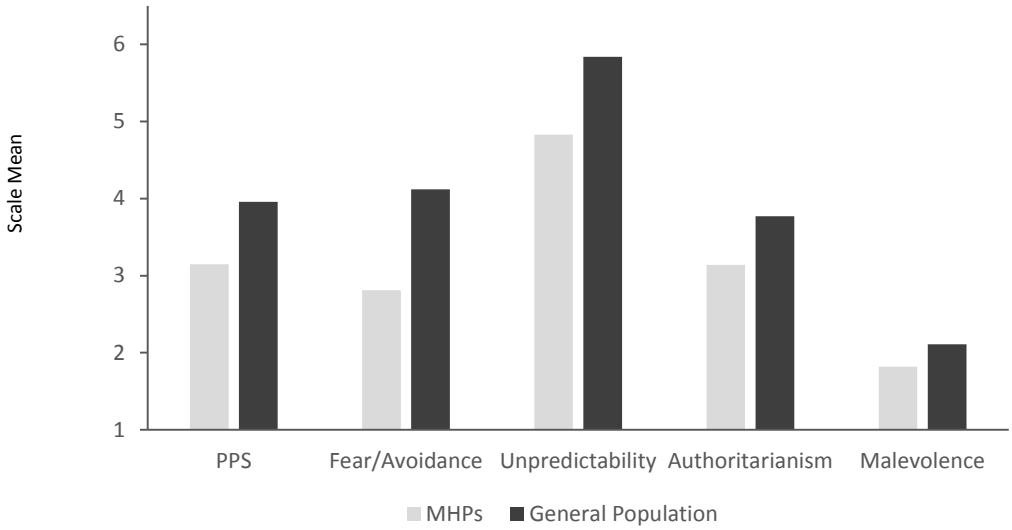

Figure 2. Mean prejudiced attitudes of mental health professionals (MHPs) and general population towards people with schizophrenia. Attitudes were measured on a 9-point Likert-

type scale ranging from 1 (“very strongly disagree”) to 9 (“very strongly agree”). *N* = 299 for MHPs, *N* = 427 for general population. PPMI = Prejudice towards People with Mental Illness scale; PPS = Prejudice towards People with Schizophrenia scale; PPD = Prejudice towards People with Depression scale.

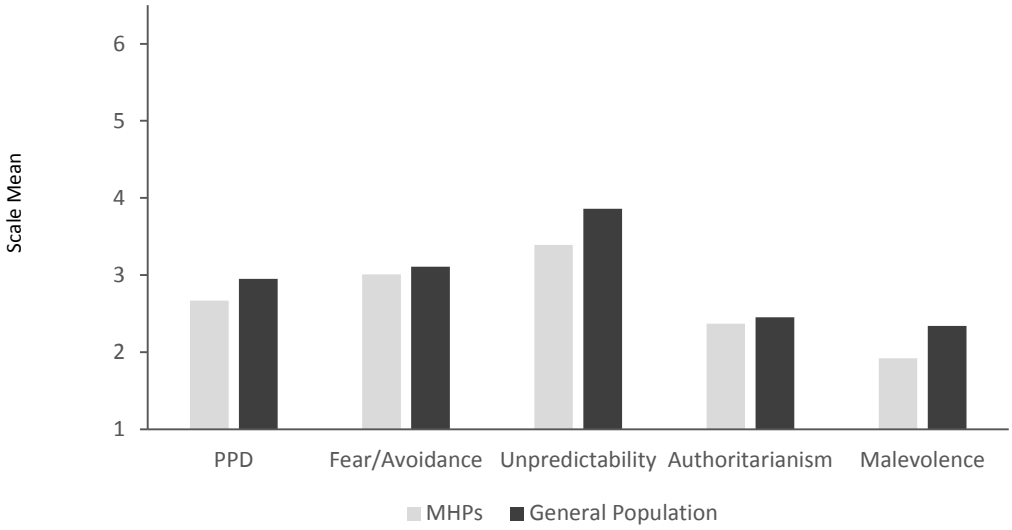

Figure 3. Mean prejudiced attitudes of mental health professionals (MHPs) and general population towards people with depression. Attitudes were measured on a 9-point Likert-type scale ranging from 1 (“very strongly disagree”) to 9 (“very strongly agree”). *N* = 299 for MHPs, *N* = 427 for general population. PPMI = Prejudice towards People with Mental Illness scale; PPS = Prejudice towards People with Schizophrenia scale; PPD = Prejudice towards People with Depression scale.

Paired-samples t-tests indicated that in both samples, full scale attitudes towards people with MI, schizophrenia, & depression were significantly different from one another ($p <$ .001), though these differences were small (.22 to 1.02; Figure 4). In line with hypothesis four, attitudes were most negative towards people with schizophrenia and least negative towards people with depression.

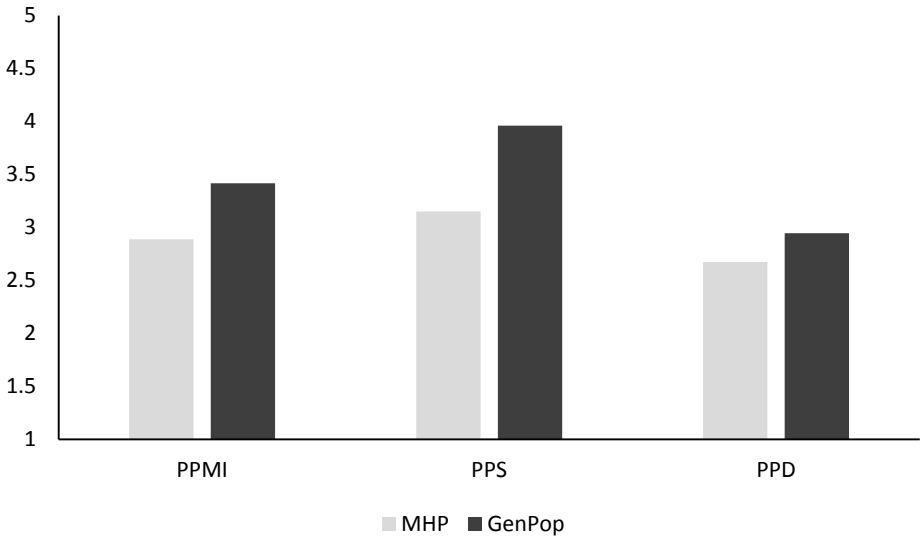

Figure 4. Mean prejudiced attitudes of mental health professionals (MHPs) and general population towards people with mental illness, schizophrenia and depression. Attitudes were measured on a 9-point Likert-type scale ranging from 1 ("very strongly disagree") to 9 ("very strongly agree"). *N* = 299 for MHPs, *N* = 427 for general population. PPMI = Prejudice towards People with Mental Illness scale; PPS = Prejudice towards People with Schizophrenia scale; PPD = Prejudice towards People with Depression scale.

Correlational Analysis for Antecedents and Prejudiced Attitudes

Zero-order correlations of the PPMI-SV, PPS-SV and PPD-SV scales with proposed antecedents are presented in Table 3. Overall attitudes towards all three groups were significantly correlated with all proposed antecedents in the expected direction in both MHPs and the general population, supporting hypothesis five(a). In all three groups, negative attitudes correlated: a) moderately to strongly positively with SDO, RWA and ethnocentrism; b) weakly to moderately positively with generalised prejudice and conservative political ideology; and c) weakly to moderately negatively with agreeableness, openness to experience, and contact. Correlations between antecedents and attitudinal dimensions can be seen in Appendices D1 to D6.

Table 3.

Correlations (r) and Semipartial Correlations (sr) between Antecedents and Prejudiced Attitudes in Mental Health Professionals (MHPs) and the General Population (GenPop)

		PPMI		PPS		PPD	
		r	*sr*	*r*	*sr*	*r*	*sr*
SDO	MHPs	.36**	.18**	.35**	.15**	.40**	.19**
	GenPop	.52**	.13**	.48**	.14**	.51**	.14**
RWA	MHPs	.33**	.19**	.30**	.09	.38**	.14**
	GenPop	.40**	.07	.41**	.10*	.44**	.09*
Ethnocentrism	MHPs	.40**	.12*	.43**	.20**	.47**	.18**
	GenPop	.53**	.14**	.48**	.14**	.51**	.11**
Generalised Prejudice	MHPs	.13*	.01	.14*	.01	.16**	.00
	GenPop	.46**	.10**	.38**	.05	.45**	.11**
Agreeableness	MHPs	-.32**	-.16**	-.25**	-.09	-.35**	-.17**
	GenPop	-.33**	-.09*	-.26**	-.07*	-.27**	-.03
Openness	MHPs	-.18**	-.03	-.29**	-.16**	-.22**	-.03
	GenPop	-.17**	.03	-.15**	.04	-.20**	-.01
Contact	MHPs	-.26**	-.18**	-.19**	-.22**	-.24**	-.17**
	GenPop	-.45**	-.29**	-.24**	-.23**	-.28**	-.12**
Political Ideology	MHPs	.13*	-.11*	.18**	-.03	.22**	-.03
	GenPop	.40**	.00	.40**	.03	.44**	.05

Note. N = 299 for MHPs and 427 for GenPop. The p values of the semipartial correlations were obtained through regression analysis.

No demographic variables were strongly related to prejudiced attitudes, partially supporting hypothesis five(b). Age was weakly significantly correlated with prejudice

towards people with MI in both groups and towards people with schizophrenia and depression in MHPs but not the general population. Additionally, non-white race was weakly significantly associated with prejudice towards people with depression in the general population.

Regression Analysis

Hierarchical linear regression was conducted, with demographic variables of age, gender, race, education and economic situation entered as covariates to investigate the role of SDO, RWA, ethnocentrism, generalised prejudice, agreeableness, openness to experience, contact and political ideology in prejudice towards people with MI. Appendix E1 presents summaries of the regression models. In each case model one represents a demographics-only model and model two represents the full model with all antecedents. The models that included antecedents explained substantially more of the variance seen in the data than did the demographics-only models. The full models accounted for between 30% (general population attitudes towards people with schizophrenia) and 47% (general population attitudes towards people with MI) of variance.

Table 3 above presents the semipartial correlations obtained through the full model regressions, which are indicative of the individual contribution of each antecedent controlling for all other antecedents and demographic variables. Of the demographic variables, the only significant predictor was age for prejudiced attitudes of MHPs towards people with MI, as such, semipartial correlations for demographic variables are not displayed. SDO and ethnocentrism were significant predictors of prejudice in both groups on each scale. RWA was always significant in predicting prejudice except in the case of prejudiced attitudes of MHPs towards people with schizophrenia. Generalised prejudice predicted attitudes of the general population towards people with MI and depression, but not schizophrenia. It did not predict prejudice in MHPs. Agreeableness predicted positive attitudes except for the attitudes

of MHPs towards people with schizophrenia and the attitudes of the general population towards people with depression. Openness to experience was only significant in predicting attitudes of MHPs towards people with schizophrenia, and in this case it was a highly significant (p = .002) predictor of positive attitudes. Contact was a significant predictor of more positive attitudes in both groups for all three scales. Political ideology only predicted prejudice of MHPs towards people with MI, where more conservative ideology predicted more prejudiced attitudes. All proposed antecedents had a unique influence on at least some prejudiced attitudes, even when controlling for demographic variables and accounting for the influence of all other antecedents. This finding, and the finding that demographic variables were almost always non-significant predictors, further supports hypotheses 5a and 5b.

Mental Health Profession-Related Differences

Differences in mean prejudice according to profession were examined (Figure 5), but no significant differences were found, partially contradicting hypothesis 5. Higher percentage of time at work spent in direct contact with people with MI was significantly correlated with positive attitudes towards people with MI (r = .18, p < .01), schizophrenia r = .14, p < .05) and depression; (r = .17, p < .01), partially supporting hypothesis 5.

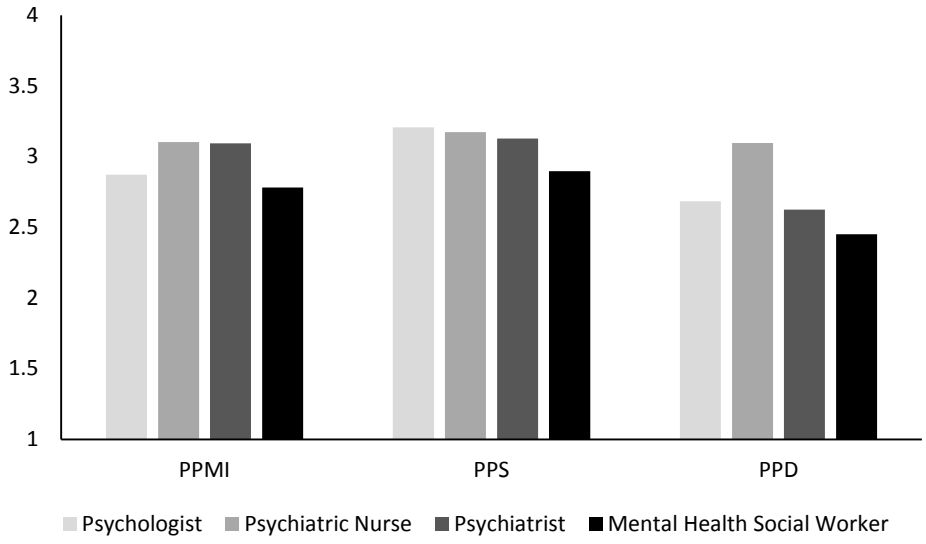

Figure 5. Mean prejudice of mental health professionals (MHPs) towards people with mental illness, schizophrenia and depression according to profession. Attitudes were measured on a 9-point Likert-type scale ranging from 1 (“very strongly disagree”) to 9 (“very strongly agree”). *N* = 299. PPMI = Prejudice towards People with Mental Illness scale; PPS = Prejudice towards People with Schizophrenia scale; PPD = Prejudice towards People with Depression scale.

Discussion

This study sought to: create and validate shortened versions of psychometrically sound measures of prejudiced attitudes towards people with MI, schizophrenia and depression (PPMI-SV, PPS-SV and PPD-SV); to apply these measures to mental health professionals and validate their use in this group; to examine the differences in attitudes between MHPs and the general population; and to expand our understanding of the factors that predict prejudice towards people with MI. The shortened measures, created with a genetic algorithm approach, demonstrated good validity in both MHPs and the general population, though internal consistency for some attitudinal dimensions was lower than desirable, partially supporting hypothesis one. The proposed four-factor structure of prejudiced attitudes was replicated in MHPs and the public, supporting hypothesis two. Prejudice towards people with MI, schizophrenia and depression was lower in MHPs than in the general population, with the most negative attitudes in both groups seen towards people with schizophrenia and the least negative towards people with depression, supporting hypotheses three and four. In line with hypothesis five(a), all proposed antecedents were correlated with attitudes in both groups, indicating that prejudice towards people with MI does indeed relate to the same factors as prejudice towards other marginalised groups. Of demographic variables, only age predicted prejudice, and it was a weaker predictor than proposed antecedents, supporting hypothesis five(b). Hypothesis six was only partially

supported, with greater workplace contact with people with MI predicting positive attitudes in MHPs, but type of profession not demonstrating any effect. This study was limited by its observational design, lack of inclusion of real-world behaviours and non-representative samples. Avenues for future research include further refining and validating the shortened measures, adapting them for the measurement of additional disorders, and expanding their use in research.

This study built upon the work of Kenny and colleagues (2018) and Gunningham & Bizumic (2018) by creating and validating shortened versions of the PPMI, PPS and PPD and by applying the scales to a new and relevant population, namely, mental health professionals. Shortened measures are desirable for their increased applicability and efficiency in research through reduced administration times, particularly where prejudice towards people with MI might not be the primary focus of a study. The PPMI, PPS and PPD were each shortened from 28 to 16 items, with four items for each attitudinal dimension retained. A genetic algorithm approach was used, a method that has produced exceptional results in valid scale abbreviation (Basarkod, Baljinder, & Ciarrochi, 2017; Eisenbarth, Lilienfeld, & Yarkoni, 2015; Sandy, Gosling, & Koelkebeck, 2014; Yarkoni, 2010). Construct validity for this scale was supported in both the general population and MHPs. The four-factor structure of prejudice towards people with MI initially proposed by Kenny and colleagues (2018), which consists of fear/avoidance, unpredictability, authoritarianism and malevolence, was evident in MHPs and the general population towards people with MI in general and towards people with schizophrenia and depression specifically. This indicates that the structure and content of prejudiced attitudes is comparable in MHPs and the general population. The scales further demonstrated convergent validity through their relationships, in the expected directions, with known correlates of prejudice towards other groups.

Internal consistency reliability was adequate for the full scales, but was at times below acceptable levels for the four-item subscales, particularly in the MHP group. The goal of internal consistency reliability is to ensure that responses on various items in a scale are generalisable to other items measuring the same construct (Cronbach, Rajaratnam, & Gleser, 1963; John & Soto, 2007). The very high correlations between the shortened and full-length scales indicate the short measures are indeed generalisable in that they strongly predict responses from the full set of items (which themselves have adequate internal consistency), capturing almost all the information in just over half the items. Further, factor analysis indicated that the attitudinal dimensions as represented by the shortened subscales hold together as discrete factors. Higher internal consistency could have been achieved by a method which selected the most similar items, though this would compromise content validity by failing to capture the breadth of the initial scale. Internal consistency can be conceptualised as a measure of redundancy of items in a scale, where very high consistency would indicate that a scale is highly homogeneous and thus inefficient (John & Soto, 2007). The method of scale abbreviation selected (genetic algorithm) prioritises capturing the breadth of each domain over creating homogeneous, and therefore internally consistent, scales (Cronbach, 1951; Yarkoni, 2010). Taken together, these points indicate that the validity of the abbreviated measures are not compromised by their at times low internal consistency. In terms of the lower internal consistency seen in MHPs, it is possible that this group took a more nuanced approach to each item as a result of their experience with people with MI, leading to more varied responses within each domain, though factor analysis confirmed that each domain did indeed hold together as a single factor in this group.

Consistent with expectations and with a small majority of previous studies (Schulze, 2007; Wahl & Aroesty-Cohen, 2010), MHPs showed lower levels of overall prejudice than the general population. This was also true for each attitudinal factor in relation to people with

MI and people with schizophrenia. However, MHPs showed similar levels of negative attitudes towards people with depression on the dimensions of fear/avoidance and authoritarianism. The similarities in attitudes might be the result of greater public familiarity with depression (Schomerus et al., 2012) and the generally low endorsement of prejudiced attitudes regarding people with depression in the general population. It is possible that the high proportion of psychologists in the sample used contributed to the more positive attitudes of MHPs than the public, as studies have found psychologists to demonstrate the least prejudiced views among professionals (Gilchrist et al., 2011; Jorm et al., 1999). In line with previous findings (e.g., Jorm et al., 1999), attitudes were most negative towards people with schizophrenia and least negative towards people with depression in both MHPs and the general population.

This is the first study to establish that known correlates of generalised prejudice are predictive of prejudice towards people with MI in MHPs, following from the revelatory findings of Kenny and colleagues (2018) that the predictors of prejudice based on, for example, ethnicity and religion are also powerful predictors of prejudice towards people with MI in the general population. All proposed antecedents (SDO, RWA, ethnocentrism, generalised prejudice, agreeableness, and openness to experience, prior contact and political ideology) were correlated with prejudice in both groups in the expected directions, with SDO, ethnocentrism and contact being the most consistent unique predictors. Looking at the unique contribution of each factor, it was revealed that of all demographic variables only older age had any predictive value, while a substantial amount of variation in prejudiced attitudes was instead explained by the correlates of generalised prejudice. These findings indicate that the separation of research on mental illness stigma from research on prejudice towards other groups may not be warranted, that generic prejudicial tendencies contribute to attitudes towards people with MI in much the same way as they contribute to attitudes towards other

marginalised groups. That is, the stereotypes and content of attitudes may be different towards people with MI, but the factors underlying the prejudice are the same. The field of MI stigma research could thus benefit substantially from drawing upon the lessons of social psychology regarding prejudice.

Few profession-related variables influenced attitudes in MHPs. Prejudice was not related to type of mental health profession, contrary to previous findings of disparities between professionals (e.g., Caldwell & Jorm, 2001; Foster & Onyeukwu, 2003; Jorm et al., 1999; Lauber et al., 2006; Nordt et al., 2006). This null finding may be a result of the sample used, which contained a greater proportion of psychologists than other professionals, which is not representative of MHPs at large. Professionals with a greater proportion of their work life spent in direct contact with people with MI had overall more positive views, consistent with previous findings (Brener et al., 2007; Ding et al., 2005). Length of time in the profession was correlated with negative attitudes, however, on closer inspection, this effect was explained by older age, which is itself associated with higher prejudice.

This study had a number of limitations. Firstly, it was observational in design, which means that only correlation, and not causation, can be implied for the relationship between proposed antecedents and prejudiced attitudes. However, previous social psychological research has provided models for the causative effect of several of the antecedents, including SDO (Asbrock, Sibley, & Duckitt, 2010; Kteily, Sidanius, & Levin, 2011), RWA (Asbrock et al., 2010), and personality (Duckitt, 2001) on prejudice. Secondly, this study did not include any measures of the proposed outcome of prejudice – discrimination. Kenny and colleagues (2018) did find an association between attitudes on the PPMI and measures of past behaviour and behavioural intentions, which are themselves predictive of discrimination. However, real-world discrimination, which is the outcome of most importance, has yet to be examined as a consequence of prejudice towards people with MI as measured by the PPMI, PPS and PPD.

Thirdly, in terms of the shortened measures created in this study, their low internal consistency reliability could be seen as a limitation. This issue has been addressed above and it is not considered to compromise the validity and utility of the shortened measures, however, where researchers desire high internal consistency they might be advised to use the original measures. Fourthly, four of the 96 items across the six scales produced inadequate loadings. These items were retained as their loadings remained significant on their respective factors, however, the appropriateness of these items might be reviewed in future studies. Fifthly, the measure of contact used was brief and did not take into account personal versus professional contact or having personally experienced MI. Such a brief measure was used due to the vast previous research on contact and MI and as previous studies using the PPMI had also used more comprehensive measures of contact. Nevertheless, the associations between prejudiced attitudes and contact found in this study might be treated with some caution. Finally, the samples used in this study were not fully representative of either the general population or of MHPs overall and may therefore not be as broadly generalisable. Indeed, as the majority of the MHP sample consisted of psychologists, any meaningful differences in prejudice according to profession may have been obscured.

Future research might be conducted to further the findings of this study. Firstly, the full or shortened scales could be used more widely, for example: in assessing the outcomes of interventions; in assessing the status of prejudice in representative samples of the general population and MHPs; in tracking changes in prejudice towards people with MI over time; or by being included in studies of generalised prejudice. Secondly, the shortened versions of the scales could be further refined and validated, including through determining whether items that performed poorly in factor analysis might be replaced by other items or removed altogether. Examining the predictive value of the scales on important real-world outcomes such as discrimination would further strengthen their validity and utility. Thirdly, these

measures could be adapted to measure prejudiced attitudes towards a wider variety of disorders. This might be particularly important in MHPs, where there is evidence to suggest heightened prejudice towards specific patient groups, such as individuals with borderline personality disorder (Cleary, Siegfried, & Walter, 2002; Deans & Meocevic, 2006; Jorm et al., 1999). Finally, the findings of this study might be incorporated into stigma reduction interventions, including by targeting the four domains of prejudice identified and by using techniques, such as perspective-taking exercises (Galinsky & Moskowitz, 2000) and co-operative learning activities (Cooper, 1999), found to be effective in reducing other forms of prejudice

Conclusion

This study successfully created short and measures of prejudiced attitudes towards people with MI, schizophrenia and depression and validated their use in the general population and amongst MHPs. It found that MHPs have more positive attitudes towards people with mental illness in general and towards people with schizophrenia, though certain attitudes towards people with depression are equivalent to those of the public. Research and theory from social psychology was drawn upon to examine the factors that influence prejudice towards people with MI. This study produced the novel findings that the factors which most strongly predict negative attitudes of MHPs towards people with MI are the known correlates of prejudice, a relationship which was also seen in the general population. This demonstrates that it is a nonspecific tendency towards prejudice, rather than characteristics of people with mental illness, that is the best determinant of negative attitudes towards them. This discovery indicates the need for a novel approach to stigma-reduction programs that goes beyond education and incorporates the vast knowledge gained from decades of combatting, for example, racism and religious intolerance. It is hoped that the PPMI and its shortened versions and adaptations might be widely employed as effective

measures of negative attitudes towards people with MI, and that the findings of this study regarding antecedents and dimensions of prejudice might increase our understanding of mental illness-stigma and inform more nuanced and effective interventions.

References

Alexander, L., & Link, B. (2003). The impact of contact on stigmatizing attitudes toward people with mental illness. *Journal of Mental Health, 12*(3), 271–289. doi:10.1080/0963823031000118267.

Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.

Altemeyer, B. (1998). The other "authoritarian personality." *Advances in Experimental Social Psychology*, *30*, 48–92. doi:10.1016/S0065-2601(08)60382-2.

Angermeyer, M. C., & Dietrich, S. (2006). Public beliefs about and attitudes towards people with mental illness: a review of population studies. *Acta Psychiatrica Scandinavica, 113*(3), 163-179. doi:10.1111/j.1600-0447.2005.00699.x.

Angermeyer, M. C., Matschinger, H., & Corrigan, P. W. (2004). Familiarity with mental illness and social distance from people with schizophrenia and major depression: testing a model using data from a representative population survey. *Schizophrenia Research*, *69*(2), 175–182. doi:10.1016/S0920-9964(03)00186-5.

Asbrock, F., Sibley, C. G., & Duckitt, J. (2010). Right-wing authoritarianism and social dominance orientation and the dimensions of generalized prejudice: A longitudinal test. *European Journal of Personality*, *24*(4), 324–340. doi:10.1002/per.746.

Baker, F., & Schulberg, H. C. (1967). The development of a community mental health ideology scale. *Community Mental Health Journal*, *3*(3), 216-225. doi:10.1001/archpsyc.1967.01730300018004.

Basarkod, G., Sahdra, B., & Ciarrochi, J. (2017). Body Image–Acceptance and Action Questionnaire–5: An Abbreviation Using Genetic Algorithms. *Behavior Therapy*. doi:10.1016/j.beth.2017.09.006.

Benson, J., Garrison, E., Dropkin, J., & Jenkins, P. L. (2016). Methodological concerns related to response bias in migrant and seasonal farmworkers. *American journal of industrial medicine*, *59*(12), 1112-1119.

Bizumic, B. (In Press). *Ethnocentrism: Integrated perspectives.* Abingdon, UK: Routledge.

Bizumic, B., & Duckitt, J. (In Press). Investigating right wing authoritarianism with a Very Short Authoritarianism scale. *Journal of Social and Political Psychology.*

Bizumic, B., & Duckitt, J. (2012). What is and is not ethnocentrism? A conceptual analysis and political implications. *Political Psychology, 33*(6), 887-909. doi:10.1111/j.1467-9221.2012.00907.x.

Bizumic, B., Duckitt, J., Popadic, D., Dru, V., & Krauss, S. (2009). A cross-cultural investigation into a reconceptualization of ethnocentrism. *European Journal of Social Psychology*, *39*(6), 871-899. doi:10.1002/ejsp.589.

Bollen, K. A., & Long, J. S., Eds. (1993). *Testing structural equation models*. Newbury Park, CA: Sage.

Brener, L., Von Hippel, W., & Kippax, S. (2007). Prejudice among health care workers toward injecting drug users with hepatitis C: Does greater contact lead to less prejudice?. *International Journal of Drug Policy*, *18*(5), 381-387. doi:10.1016/j.drugpo.2007.01.006.

Caldwell, T. M., & Jorm, A. F. (2001). Mental health nurses' beliefs about likely outcomes for people with schizophrenia or depression: a comparison with the public and other healthcare professionals. *International Journal of Mental Health Nursing*, *10*(1), 42-54. doi:10.1046/j.1440-0979.2001.00190.x.

Chambers, M., Guise, V., Välimäki, M., Botelho, M. A. R., Scott, A., Staniuliene, V., & Zanotti, R. (2010). Nurses' attitudes to mental illness: A comparison of a sample of

nurses from five European countries. *International Journal of Nursing Studies*, *47*(3), 350-362. doi:10.1016/j.ijnurstu.2009.08.008.

Cleary, M., Siegfried, N., & Walter, G. (2002). Experience, knowledge and attitudes of mental health staff regarding clients with a borderline personality disorder. *International Journal of Mental Health Nursing*, *11*(3), 186-191. doi:10.1046/j.1440-0979.2002.00246.x.

Cohen, J., & Struening, E. L. (1962). Opinions about mental illness in the personnel of two large mental hospitals. *The Journal of Abnormal and Social Psychology*, *64*(5), 349. doi:10.1037/h0045526.

Cooper, R. (1999). Improving intergroup relations: Lessons learned from cooperative learning programs. *Journal of Social issues*, *55*(4), 647-663.

Corrigan, P. W., & Kleinlein, P. (2005). The Impact of Mental Illness Stigma. In Corrigan, P. W. (Ed), (2005). *On the stigma of mental illness: Practical strategies for research and social change* (11-44). Washington, DC: American Psychological Association. doi:10.1037/10887-001.

Corrigan, P., Markowitz, F. E., Watson, A., Rowan, D., & Kubiak, M. A. (2003). An attribution model of public discrimination towards persons with mental illness. Journal of health and Social Behavior, 162-179. doi:10.2307/1519806.

Corrigan, P. W., & Shapiro, J. R. (2010). Measuring the impact of programs that challenge the public stigma of mental illness. *Clinical Psychology Review*, *30*(8), 907-922. doi:10.1016/j.cpr.2010.06.004.

Corrigan, P. W., & Watson, A. C. (2002). Understanding the impact of stigma on people with mental illness. *World psychiatry*, *1*(1), 16.

Corrigan, P. W., Watson, A. C., & Barr, L. (2006). The self-stigma of mental illness: Implications for self-esteem and self-efficacy. *Journal of social and clinical psychology*, *25*(8), 875.

Couture, S., & Penn, D. (2003). Interpersonal contact and the stigma of mental illness: A review of the literature. *Journal of mental health*, *12*(3), 291-305. doi:10.1080/09638231000118276.

Cronbach, L. J., Rajaratnam, N., & Gleser, G. C. (1963). Theory of generalizability: A liberalization of reliability theory. *British Journal of Mathematical and Statistical Psychology*, *16*(2), 137-163. doi: 10.1111/j.2044-8317.1963.tb00206.x.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*(3), 297-334. doi:10.1007/BF02310555.

Dasgupta, N., McGhee, D. E., Greenwald, A. G., & Banaji, M. R. (2000). Automatic preference for White Americans: Eliminating the familiarity explanation. *Journal of Experimental Social Psychology*, *36*(3), 316-328. doi: 10.1006/jesp.1999.1418.

Day, E. N., Edgren, K., & Eshleman, A. (2007). Measuring stigma toward mental illness: development and application of the mental illness stigma scale. *Journal of Applied Social Psychology*, *37*(10), 2191-2219. doi:10.1111/j.1559-1816.2007.00255.x.

Deans, C., & Meocevic, E. (2006). Attitudes of registered psychiatric nurses towards patients diagnosed with borderline personality disorder. *Contemporary Nurse*, *21*(1), 43-49. doi:10.5172/conu.2006.21.1.43.

Ding, L., Landon, B. E., Wilson, I. B., Wong, M. D., Shapiro, M. F., & Cleary, P. D. (2005). Predictors and consequences of negative physician attitudes toward HIV-infected injection drug users. *Archives of Internal Medicine*, *165*(6), 618-623. doi:10.1001/archinte.165.6.618.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-IPIP scales: tiny-yet-effective measures of the Big Five factors of personality. *Psychological assessment, 18*(2), 192. doi:10.1037/1040-3590.18.2.192.

Dovidio, J. F., Love, A., Schellhaas, F. M., & Hewstone, M. (2017). Reducing intergroup bias through intergroup contact: Twenty years of progress and future directions. *Group Processes & Intergroup Relations, 20*(5), 606-620. doi:10.1177/1368430217712052.

Duckitt, J., & Bizumic, B. (2013). Multidimensionality of right-wing authoritarian attitudes: Authoritarianism-conservatism-traditionalism. *Political Psychology, 34*(6), 841-862. doi:10.1111/pops.12022.

Duckitt, J. (2001). A dual-process cognitive-motivational theory of ideology and prejudice. *Advances in experimental social psychology, 33*, 41-113. doi:10.1016/S0065-2601(01)80004-6.

Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology, 105*(3), 399-412.

Eid, M. , Gollwitzer, M. , Schmitt, M. (2011). *Statistik und Forschungsmethoden* [Statistics and research methods] (2nd ed.). Weinheim, Germany: Beltz.

Eisenbarth, H., Lilienfeld, S. O., & Yarkoni, T. (2015). Using a genetic algorithm to abbreviate the Psychopathic Personality Inventory–Revised (PPI-R). *Psychological assessment, 27*(1), 194.doi: 10.1037/pas0000032.

Foster, J. H., & Onyeukwu, C. (2003). The attitudes of forensic nurses to substance using service users. *Journal of Psychiatric and Mental Health Nursing, 10*(5), 578-584. doi:10.1046/j.1365-2850.2003.00663.x.

Fraser, K., & Gallop, R. (1993). Nurses' confirming/disconfirming responses to patients diagnosed with borderline personality disorder. *Archives of psychiatric nursing*, *7*(6), 336-341. doi:10.1016/0883-9417(93)90051-W.

Galinsky, A. D., & Moskowitz, G. B. (2000). Perspective-taking: decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of personality and social psychology, 78*(4), 708.

Gilchrist, G., Moskalewicz, J., Slezakova, S., Okruhlica, L., Torrens, M., Vajd, R., & Baldacchino, A. (2011). Staff regard towards working with substance users: a European multi-centre study. *Addiction*, *106*(6), 1114-1125. doi:10.1111/j.1360-0443.2011.03407.x.

Goldberg, L. R. (1999). International Personality Item Pool: A scientific collaboratory for the development of advanced measures of personality and other individual differences.

Grausgruber, A., Meise, U., Katschnig, H., Schöny, W., & Fleischhacker, W. W. (2007). Patterns of social distance towards people suffering from schizophrenia in Austria: a comparison between the general public, relatives and mental health staff. *Acta Psychiatrica Scandinavica*, *115*(4), 310-319. doi:10.1111/j.1600-0447.2006.00882.x.

Griffiths, K. M., Christensen, H., Jorm, A. F., Evans, K., & Groves, C. (2004). Effect of web-based depression literacy and cognitive–behavioural therapy interventions on stigmatising attitudes to depression: Randomised controlled trial. *The British Journal of Psychiatry*, *185*(4), 342-349.

Gunningham, B., & Bizumic, B. (2018). Attitudes towards People with Mental Illness, Schizophrenia and Depression: Measurement, Structure, and Antecedents. Unpublished manuscript.

Hansson, L., Jormfeldt, H., Svedberg, P., & Svensson, B. (2013). Mental health professionals' attitudes towards people with mental illness: Do they differ from attitudes held by people with mental illness?. *International Journal of Social Psychiatry*, *59*(1), 48-54. doi:10.1177/0020764011423176.

Hayward, P., & Bright, J. A. (1997). Stigma and mental illness: A review and critique. *Journal of Mental Health*. doi:10.1080/09638239718671.

Hirai, M., & Clum, G. A. (2000). Development, reliability, and validity of the beliefs toward mental illness scale. *Journal of psychopathology and Behavioral Assessment, 22*(3), 221-236. doi:10.1023/A:10075484.

Hodson, G., & Costello, K. (2007). Interpersonal disgust, ideological orientations, and dehumanization as predictors of intergroup attitudes. *Psychological Science, 18*(8), 691-698. doi:10.1111/j.1467-9280.2007.01962.x.

Esses, V. M., Jackson, L. M., Dovidio, J. F., & Hodson, G. (2005). Instrumental Relations among Groups: Group Competition, Conflict and Prejudice. *On the nature of prejudice: Fifty years after Allport*, 227-243.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal, 6*(1), 1-55.

Hugo, M. (2001). Mental health professionals' attitudes towards people who have experienced a mental health disorder. *Journal of psychiatric and mental health nursing*, *8*(5), 419-425. doi:10.1046/j.1351-0126.2001.00430.x.

Jackman, M. R. (1973). Education and prejudice or education and response-set?. *American Sociological Review*, 327-339.

John, O. P., & Soto, C. J. (2007). *The importance of being valid.* Handbook of research methods in personality psychology.

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., & Henderson, S. (1999). Attitudes towards people with a mental disorder: a survey of the Australian public and health professionals. *Australian and New Zealand Journal of Psychiatry*, *33*(1), 77-83. doi:10.1046/j.1440-1614.1999.00513.x.

Kam, C. C. S., & Meyer, J. P. (2015). How careless responding and acquiescence response bias can influence construct dimensionality: The case of job satisfaction. *Organizational Research Methods*, *18*(3), 512-541.

Kenny, A., Bizumic, B., & Griffiths, K.M. (2018). The Prejudice towards People with Mental Illness (PPMI) Scale: Structure and Validity. Manuscript submitted for publication.

Kingdon, D., Sharma, T., & Hart, D. (2004). What attitudes do psychiatrists hold towards people with mental illness?. *The Psychiatrist*, *28*(11), 401-406. doi: 10.1192/pb.28.11.401.

Kolodziej, M. E., & Johnson, B. T. (1996). Interpersonal contact and acceptance of persons with psychiatric disorders: a research synthesis. *Journal of consulting and clinical psychology*, *64*(6), 1387. doi:10.1037/0022-006X.64.6.1387.

Kteily, N. S., Sidanius, J., & Levin, S. (2011). Social dominance orientation: Cause or 'mere effect'?: Evidence for SDO as a causal predictor of prejudice and discrimination against ethnic and racial outgroups. *Journal of Experimental Social Psychology*, *47*(1), 208-214. doi:10.1016/j.jesp.2010.09.009.

Lauber, C., Nordt, C., Braunschweig, C., & Rössler, W. (2006). Do mental health professionals stigmatize their patients?. *Acta Psychiatrica Scandinavica*, *113*(s429), 51-59. doi:10.1111/j.1600-0447.2005.00718.x.

Link, B. G., & Phelan, J. C. (2006). Stigma and its public health implications. *The Lancet, 367*(9509), 528-529. doi:10.1016/S0140-6736(06)68184-1.

Link, B. G. (1987). Understanding labeling effects in the area of mental disorders: An assessment of the effects of expectations of rejection. *American Sociological Review,* 96-112. doi:10.2307/2095395.

Link, B. G., Phelan, J. C., Bresnahan, M., Stueve, A., & Pescosolido, B. A. (1999). Public conceptions of mental illness: labels, causes, dangerousness, and social distance. *American journal of public health*, *89*(9), 1328-1333. doi:10.2105/AJPH.89.9.1328.

Luty, J., Fekadu, D., Umoh, O., & Gallagher, J. (2006). Validation of a short instrument to measure stigmatised attitudes towards mental illness. *The Psychiatrist*, *30*(7), 257-260. doi:10.1192/pb.30.7.257.

Magliano, L., Fiorillo, A., De Rosa, C., Malangone, C., & Maj, M. (2004). Beliefs about schizophrenia in Italy: a comparative nationwide survey of the general public, mental health professionals, and patients' relatives. *The Canadian Journal of Psychiatry*, *49*(5), 323-331. doi:10.1177/070674370404900508.

Newton-Howes, G., Weaver, T., & Tyrer, P. (2008). Attitudes of staff towards patients with personality disorder in community mental health teams. *Australian & New Zealand Journal of Psychiatry*, *42*(7), 572-577. doi:10.1080/00048670802119739.

Nordt, C., Rössler, W., & Lauber, C. (2006). Attitudes of mental health professionals toward people with schizophrenia and major depression. *Schizophrenia bulletin*, *32*(4), 709-714. doi:10.1093/schbul/sbj065.

Perry, J. L., Nicholls, A. R., Clough, P. J., & Crust, L. (2015). Assessing model fit: Caveats and recommendations for confirmatory factor analysis and exploratory structural

equation modeling. *Measurement in Physical Education and Exercise Science, 19*(1), 12-21.

Ray, J. J. (1983). Reviving the problem of acquiescent response bias. *The Journal of Social Psychology, 121*(1), 81-96.

Reavley, N. J., Mackinnon, A. J., Morgan, A. J., & Jorm, A. F. (2014). Stigmatising attitudes towards people with mental disorders: A comparison of Australian health professionals with the general community. *Australian & New Zealand Journal of Psychiatry, 48*(5), 433-441. doi:10.1177/0004867413500351.

Ross, C. A., & Goldner, E. M. (2009). Stigma, negative attitudes and discrimination towards mental illness within the nursing profession: a review of the literature. *Journal of psychiatric and mental health nursing, 16*(6), 558-567. doi:10.1111/j.1365-2850.2009.01399.x.

Rosseel, Y. (2011). lavaan: an R package for structural equation modeling and more Version 0.4-9 (BETA).

Rudman, L. A., Ashmore, R. D., & Gary, M. L. (2001). " Unlearning" automatic biases: the malleability of implicit prejudice and stereotypes. *Journal of personality and social psychology, 81*(5), 856. doi: 10.1037/0022-3514.81.5.856.

Rüsch, N., Angermeyer, M. C., & Corrigan, P. W. (2005). Mental illness stigma: concepts, consequences, and initiatives to reduce stigma. *European Psychiatry, 20*(8), 529-539.

Sandy, C. J., Gosling, S. D., & Koelkebeck, T. (2014). Psychometric comparison of automated versus rational methods of scale abbreviation: An illustration using a brief measure of values. *Journal of Individual Differences, 35*(4), 221. doi:10.1027/1614-0001/a000144.

Schafer, T., Wood, S., & Williams, R. (2011). A survey into student nurses' attitudes towards mental illness: Implications for nurse training. *Nurse education today*, *31*(4), 328-332. doi:10.1016/j.nedt.2010.06.010.

Schomerus, G., Schwahn, C., Holzinger, A., Corrigan, P. W., Grabe, H. J., Carta, M. G., & Angermeyer, M. C. (2012). Evolution of public attitudes about mental illness: a systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, *125*(6), 440-452. doi:10.1111/j.1600-0447.2012.01826.x.

Schulze, B. (2007). Stigma and mental health professionals: a review of the evidence on an intricate relationship. *International review of Psychiatry*, *19*(2), 137-155. doi:10.1080/09540260701278929.

Sharac, J., Mccrone, P., Clement, S., & Thornicroft, G. (2010). The economic impact of mental health stigma and discrimination: a systematic review. *Epidemiology and Psychiatric Sciences*, *19*(3), 223-232. doi:10.1017/S1121189X00001159.

Sidanius, J., & Pratto, F. (2001). *Social dominance: An intergroup theory of social hierarchy and oppression*. Cambridge University Press.

Singh, S. P., Baxter, H., Standen, P., & Duggan, C. (1998). Changing the attitudes of tomorrow's doctors' towards mental illness and psychiatry: a comparison of two teaching methods. *Medical education*, *32*(2), 115-120. doi:10.1046/j.1365-2923.1998.00162.x.

Smith, G. T., McCarthy, D. M., & Anderson, K. G. (2000). On the sins of short-form development. *Psychological assessment*, *12*(1), 102. doi:10.1037/1040-3590.12.1.102.

Stephan, W. G., & Stephan, C. W. (2000). An integrated threat theory of prejudice. *Reducing prejudice and discrimination*, 23-45.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate analysis.* California State

University Northridge: Harper Collins College Publishers.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Allyn & Bacon/Pearson Education.

Taylor, S. M., & Dear, M. J. (1981). Scaling community attitudes toward the mentally ill. *Schizophrenia bulletin*, *7*(2), 225. doi:10.1093/schbul/7.2.225.

Thornicroft, G., Rose, D., Kassam, A., & Sartorius, N. (2007). Stigma: ignorance, prejudice or discrimination?. *The British journal of psychiatry: the journal of mental science*, *190*, 192. doi:10.1192/bjp.bp.106.025791.

Wahl, O., & Aroesty-Cohen, E. (2010). Attitudes of mental health professionals about mental illness: A review of the recent literature. *Journal of Community Psychology*, *38*(1), 49-62. doi:10.1002/jcop.20351.

Wahl, O. F. (1999). Mental health consumers' experience of stigma. *Schizophrenia* bulletin, 25(3), 467. doi:10.1093/ 033394.

Wittenbrink, B., Judd, C. M., & Park, B. (2001). Spontaneous prejudice in context: Variability in automatically activated attitudes. *Journal of personality and social psychology*, *81*(5), 815. doi: 10.1037/0022-3514.81.5.815.

Yarkoni, T. (2010). Personality in 100,000 words: A large-scale analysis of personality and word use among bloggers. *Journal of research in personality*, *44*(3), 363-373. doi:10.1016/j.jrp.2010.04.001.

Appendix A

Supplementary Materials to Method

Table A1.

Demographic Variables for Mental Health Professional and General Population Samples

	MHPs	GenPop
Age (Mean (SD))	41.67 (13.91)	26.53 (11.15)
Gender (% Female)	81.72	60.66
Race (% specifying 'white')	86.96	83.61
English as primary language (%)	96.66	85.01
Some college/university education or greater (%)	98.66	69.78
Economic situation (% 'higher than average' or greater)	52.84	32.56

Note. N = 299 for mental health professionals (MHPs), N = 427 for the general population (GenPop).

Table A2.

Mental Health Professions Represented in MHP Sample

	N	%
Psychologist	199	67
Psychiatric Nurse	9	3
Psychiatrist	19	6
Mental Health Social Worker	24	8
Other	48	16

Table A3.

Cronbach's Alpha Coefficients for the Original 28-item PPMI Scale and Subscales

	Full Scale	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
PPMI	.93	.91	.82	.79	.80

Note. Alphas are those reported in Kenny and colleague's 2018 study, N = 309.

Table A4.

Correlations between original full scale and subscales and shortened scale and subscales

		Correlation (*r*)
PPMI	Total Scale	.98
	Fear/Avoidance	.96
	Unpredictability	.97
	Authoritarianism	.92
	Malevolence	.93
PPS	Total Scale	.99
	Fear/Avoidance	.97
	Unpredictability	.98
	Authoritarianism	.98
	Malevolence	.91
PPD	Total Scale	.98
	Fear/Avoidance	.95
	Unpredictability	.98
	Authoritarianism	.98
	Malevolence	.93

Note. Original full scale total 28 items, shortened scale total 16 items. Correlations are taken from data collected by Gunningham & Bizumic (2015), $N = 406$.

Appendix B

Supplementary Materials to Results – Confirmatory Factor Analysis

Table B1.

Factor Loadings for Items in the Prejudice towards People with Mental Illness Scale, Shortened Version

PPMI-SV Items		Fear/Av	Unpred	Auth	Mal
I would be just as happy to invite a person with mental illness into my home as I would anyone else †	MHPs	.49			
	GenPop	.74			
I would feel relaxed if I had to talk to someone who was mentally ill †	MHPs	.20			
	GenPop	.62			
I would be less likely to become romantically involved with someone if I knew they were mentally ill	MHPs	.50			
	GenPop	.67			
I would feel unsafe being around someone who is mentally ill	MHPs	.46			
	GenPop	.78			
The behaviour of people with mental illness is unpredictable	MHPs		.70		
	GenPop		.82		
The behaviour of people with mental illness is just as predictable as people who are mentally healthy†	MHPs		.45		
	GenPop		.71		
In general, you cannot predict how people with mental illness will behave	MHPs		.55		
	GenPop		.69		
I usually find people with mental illness to be consistent in their behaviour†	MHPs		.59		
	GenPop		.62		
People who are mentally ill should be forced to have treatment	MHPs			.45	
	GenPop			.48	
Those who have serious mental illness should not be allowed to have children	MHPs			.48	

	GenPop	.63	
People who are mentally ill should be allowed to live their life any way they want†	MHPs	.66	
	GenPop	.78	
Society does not have a right to limit the freedom of people with mental illness†	MHPs	.57	
	GenPop	.77	
We, as a society, should be spending much more money on helping people with mental illness†	MHPs		.42
	GenPop		.58
People who develop mental illness are genetically inferior to other people	MHPs		.69
	GenPop		.66
People with mental illness should support themselves and not expect handouts	MHPs		.41
	GenPop		.33
People who become mentally ill are not failures in life†	MHPs		25
	GenPop		.47

Note. N = 299 MHPs, 427 GenPop. Loadings are standardised factor loadings from CFA. † indicates item is reverse-scored. $p < .01$ for all loadings. Fear/Av = Fear/Avoidance; Unpred = Unpredictability; Auth = Authoritarianism; Mal = Malevolence.

Table B2.

Factor Loadings for Items in the Prejudice towards People with Schizophrenia Scale, Shortened Version

PPS-SV Items		Fear/Av	Unpred	Auth	Mal
I would find it hard to talk to someone who has schizophrenia	MHPs	.56			
	GenPop	.73			
I would be just as happy to invite a person with schizophrenia into my home as I would anyone else†	MHPs	.63			
	GenPop	.85			
I am not scared of people with schizophrenia†	MHPs	.68			
	GenPop	.89			
I would feel unsafe being around someone who had schizophrenia	MHPs	.64			
	GenPop	.81			
The behaviour of people with schizophrenia is just as predictable as people who are mentally healthy†	MHPs		.70		
	GenPop		.69		
In general, you cannot predict how people with schizophrenia will behave	MHPs		.72		
	GenPop		.84		
People with schizophrenia often do unexpected things	MHPs		.70		
	GenPop		.78		
People with schizophrenia behave in ways that are foreseeable†	MHPs		.60		
	GenPop		.63		
People who have schizophrenia should be free to make their own decisions†	MHPs			.76	
	GenPop			.84	
People who have schizophrenia should be forced to have treatment	MHPs			.45	
	GenPop			.71	
Those who have schizophrenia should not be allowed to have children	MHPs			.49	

	GenPop	.62	
Society does not have a right to limit the freedom of people with schizophrenia†	MHPs	.37	
	GenPop	.68	
People who develop schizophrenia are genetically inferior to other people	MHPs		.53
	GenPop		.74
People with schizophrenia do not deserve our sympathy	MHPs		.41
	GenPop		.31
People with schizophrenia should support themselves and not expect handouts	MHPs		.46
	GenPop		.25
People who become schizophrenic are not failures in life†	MHPs		.20
	GenPop		.50

Note. N = 299 MHPs, 427 GenPop. Loadings are standardised factor loadings from CFA. † indicates item is reverse-scored. $p < .01$ for all loadings. Fear/Av = Fear/Avoidance; Unpred = Unpredictability; Auth = Authoritarianism; Mal = Malevolence.

Table B3.

Factor Loadings for Items in the Prejudice towards People with Depression Scale, Shortened Version

PPD-SV Items		Fear/Av	Unpred	Auth	Mal
I would find it hard to talk to someone who has depression	MHPs	.47			
	GenPop	.63			
I would be just as happy to invite a person with depression into my home as I would anyone else†	MHPs	.37			
	GenPop	.69			
In general it is easy to interact with someone who has depression†	MHPs	.54			
	GenPop	.68			
I would be less likely to become romantically involved with someone if I knew they had depression	MHPs	.41			
	GenPop	.60			
The behaviour of people with depression is unpredictable	MHPs		.83		
	GenPop		.87		
The behaviour of people with depression is just as predictable as people who are mentally healthy†	MHPs		.70		
	GenPop		.75		
People with depression often do unexpected things	MHPs		.67		
	GenPop		.79		
People with depression behave in ways that are foreseeable†	MHPs		.56		
	GenPop		.50		
People who have depression should be forced to have treatment	MHPs			.65	
	GenPop			.54	
Those who have depression should not be allowed to have children	MHPs			.50	
	GenPop			.54	
People who have depression should be allowed to live their life any way they want†	MHPs			.43	

	GenPop	.79	
Society does not have a right to limit the freedom of people with depression†	MHPs	.41	
	GenPop	.69	
We, as a society, should be spending much more money on helping people with depression†	MHPs		.33
	GenPop		.56
People who develop depression are genetically inferior to other people	MHPs		.59
	GenPop		.54
People with depression should support themselves and not expect handouts	MHPs		.50
	GenPop		.40
People who become depressed are not failures in life†	MHPs		.30
	GenPop		.44

Note. N = 299 MHPs, 427 GenPop. Loadings are standardised factor loadings from CFA. † indicates item is reverse-scored. $p < .01$ for all loadings. Fear/Av = Fear/Avoidance; Unpred = Unpredictability; Auth = Authoritarianism; Mal = Malevolence.

Table B4.

Fit Indices for One-Factor Model

	χ^2	*df*	*p*	χ^2:*df* ratio	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR
PPMI									
MHPs	467.02	104	<.001	4.49	.57	.51	.108	.10-.12	.084
GenPop	769.12	104	<.001	7.39	.71	.66	.122	.11-.13	.087
PPS									
MHPs	335.13	104	.001	3.22	.76	.72	.086	.08-.10	.075
GenPop	787.84	104	<.001	7.58	.76	.72	.124	.12-.13	.089
PPD									
MHPs	359.85	104	<.001	3.46	.69	.64	.091	.08-.10	.086
GenPop	827.07	104	<.001	7.95	.62	.56	.128	.12-.14	.096

Note. N = 299 for MHPs and 427 for GenPop.

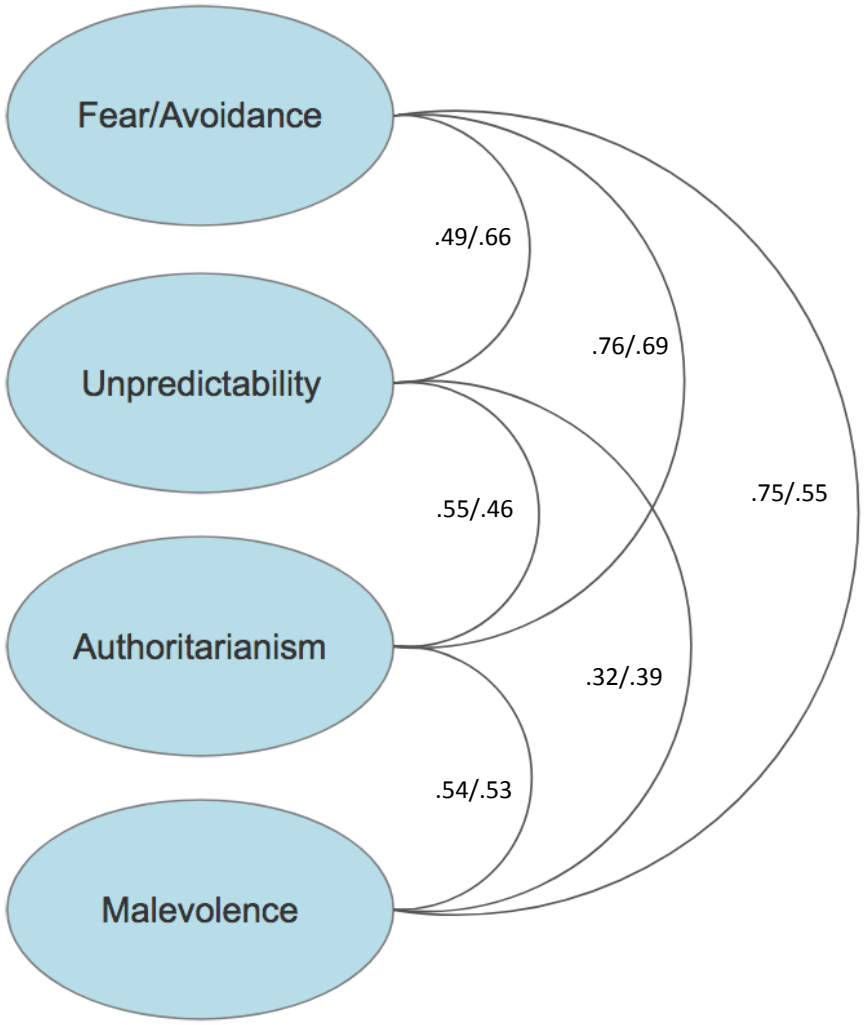

Figure B5. Intercorrelation between factors in four-factor model of prejudice towards people with MI in MHPs and the general population. Manifest indicators are not shown. $N = 299$ for MHPs and 427 for GenPop. Correlations displayed as MHP/GenPop. All correlations significant at $p < .001$.

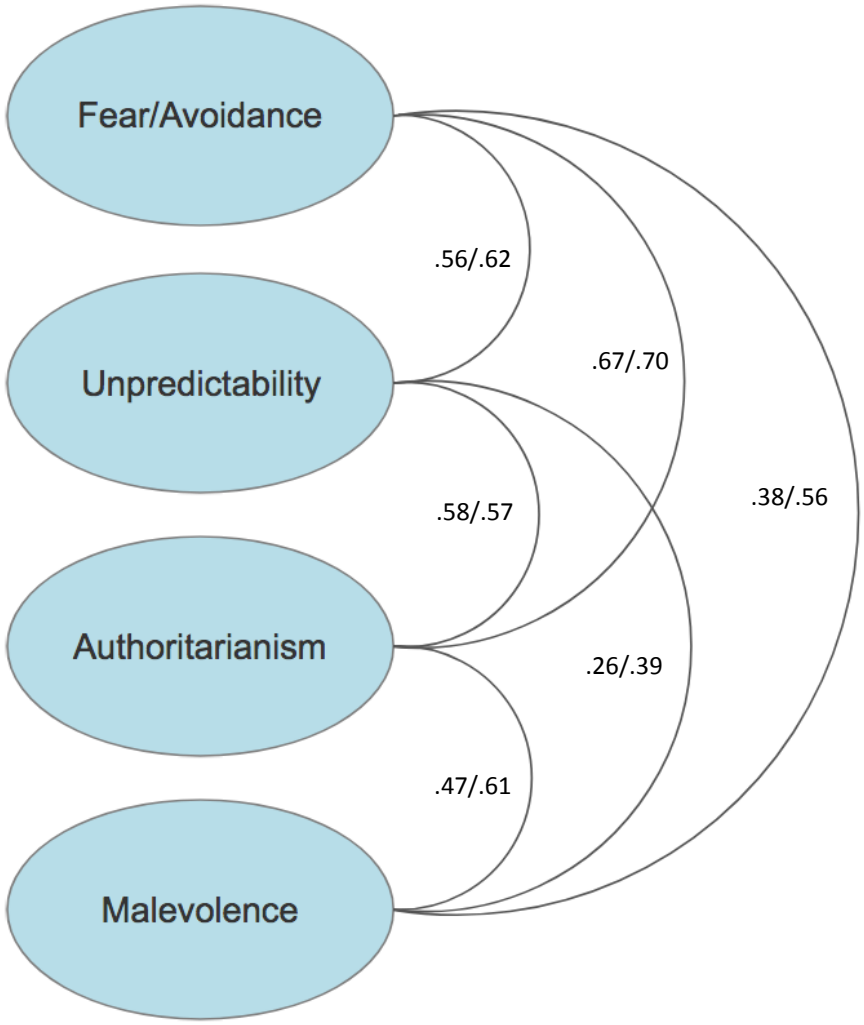

Figure B6. Intercorrelation between factors in four-factor model of prejudice towards people with schizophrenia in MHPs and the general population. Manifest indicators are not shown. N = 299 for MHPs and 427 for GenPop. Correlations displayed as MHP/GenPop. All correlations significant at $p < .001$.

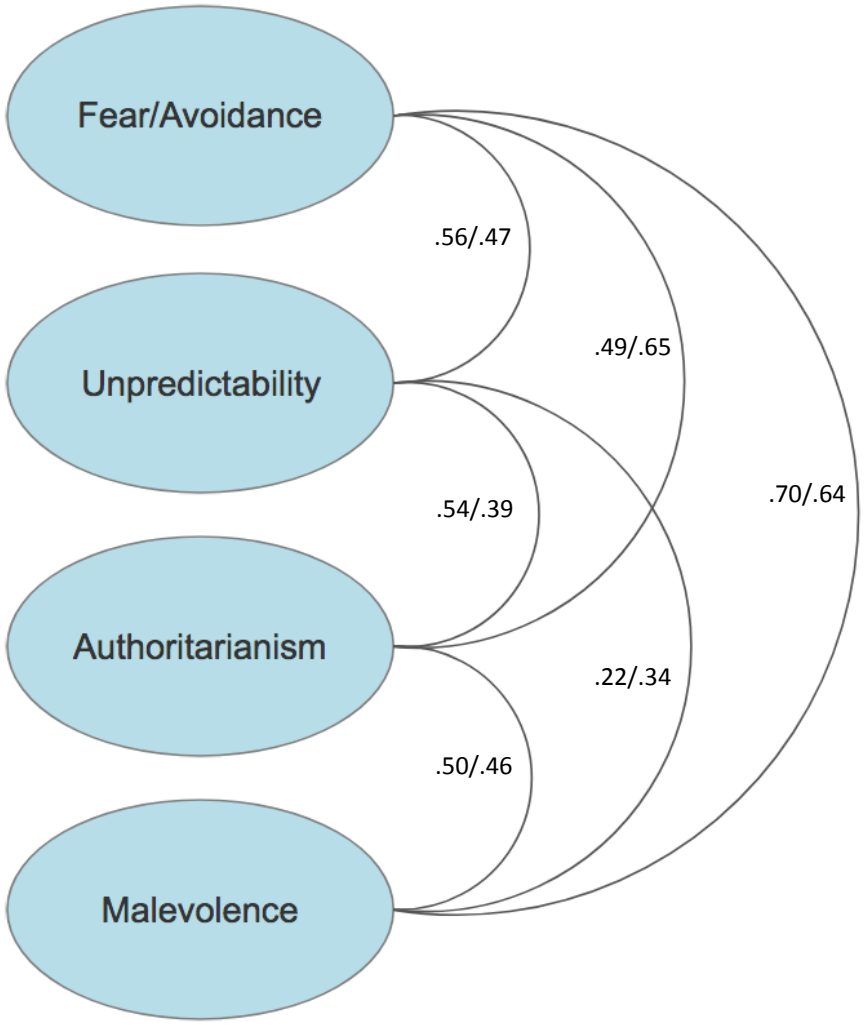

Figure B7. Intercorrelation between factors in four-factor model of prejudice towards people with depression in MHPs and the general population. Manifest indicators are not shown. N = 299 for MHPs and 427 for GenPop. Correlations displayed as MHP/GenPop. All correlations significant at $p < .001$.

Appendix C

Supplementary Materials to Results – Comparison of Mean Attitudes towards People with MI, Schizophrenia and Depression

Table C1.

Comparison of Mean Prejudice between MHPs and General Population

		PPMI	Diff.	PPS	Diff.	PPD	Diff.
Full Scale	MHPs	2.89 (.81)	0.53***	3.15 (.89)	0.81***	2.67 (.82)	0.28***
	GenPop	3.42 (1.12)		3.96 (1.19)		2.95 (.98)	
Fear/Av	MHPs	2.87 (1.11)	0.60***	2.81 (1.29)	1.31***	3.01 (1.16)	0.10
	GenPop	3.48 (1.62)		4.12 (1.91)		3.11 (1.46)	
Unpred	MHPs	3.94 (1.33)	0.70***	4.83 (1.40)	1.01***	3.39 (1.38)	0.47***
	GenPop	4.64 (1.52)		5.84 (1.43)		3.86 (1.51)	
Auth	MHPs	2.93 (1.30)	0.32**	3.14 (1.34)	0.63***	2.37 (1.18)	0.08
	GenPop	3.26 (1.62)		3.77 (1.77)		2.45 (1.32)	
Mal	MHPs	1.80 (.86)	0.48**	1.82 (0.92)	0.29**	1.92 (.94)	0.43**
	GenPop	2.29 (1.15)		2.11 (1.09)		2.36 (1.18)	

Note: ** = $p < .01$, *** = $p < .001$. Means taken from 9-point Likert scale ranging from 1 (very strongly disagree) to 9 (very strongly agree). Difference significance obtained through a one-way multivariate analysis of variance (MANOVA). Standard deviations are displayed in brackets. Fear/Av = Fear/Avoidance; Unpred = Unpredictability; Auth = Authoritarianism; Mal = Malevolence. The Holm-Bonferroni method was applied post-hoc to correct for familywise error. All significant differences in means remained significant with this correction.

Appendix D

Supplementary Materials to Results – Correlational Analysis for Antecedents and Prejudiced Attitudes

Table D1.

Correlations for PPMI Scale and Subscales and Antecedents in MHPs

	PPMI	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
	r	*r*	*r*	*r*	*r*
SDO	.36**	.20**	.19**	.28**	.38**
RWA	.33**	.16**	.32**	.22**	.23**
Ethnocentrism	.40**	.26**	.29**	.25**	.37**
Generalised Prej.	.13*	.05	.05	.12*	.12*
Agreeableness	-.32**	-.27**	- .27**	- .25**	- .33**
Openness	-.18**	-.06	-.06	-.19**	-.09
Contact	-.26**	-.30**	-.17**	-.14*	-.11
Political Ideology	.13*	.07	.08	.10	.12*

Note. $N = 299$. $*p < .05$ $**p < .01$.

Table D2.

Correlations for PPMI Scale and Subscales and Antecedents in the General Population

	PPMI	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
	r	*r*	*r*	*r*	*r*
SDO	.52**	.38**	.28**	.43**	.50**
RWA	.40**	.29**	.26**	.31**	.35**
Ethnocentrism	.53**	.41**	.35**	.37**	.51**
Generalised Prej	.46**	.40**	.26**	.26**	.43**
Agreeableness	-.33**	-.29**	-.14**	-.14**	-.37**
Openness	-.17**	-.12*	-.09	-.09	-.21**
Contact	-.45**	-.45**	-.32**	-.30**	-.26**
Political Ideology	.40**	.30**	.28**	.28**	.37**

Note. $N = 427$. $*p < .05$ $**p < .01$.

Table D3.

Correlations for PPS Scale and Subscales and Antecedents in MHPs

	PPS	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
	r	*r*	*r*	*r*	*r*
SDO	.35**	.25**	.15*	.30**	.35**
RWA	.30**	.19**	.22**	.22**	.23**
Ethnocentrism	.43**	.37**	.23**	.32**	.33**
Generalised Prej	.14*	.09	.07	.17**	.09
Agreeableness	-.25**	-.13*	-.08	-.28**	-.26*
Openness	-.29**	-.20**	-.20**	-.27**	-.13*
Contact	-.19**	-.30**	-.18**	-.01	-.04
Political Ideology	.18**	.09	.09	.16**	.18**

Note. $N = 299$. $*p < .05$ $**p < .01$.

Table D4.

Correlations for PPS Scale and Subscales and Antecedents in the General Population

	PPS	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
	r	*r*	*r*	*r*	*r*
SDO	.48**	.36**	.18**	.44**	.50**
RWA	.41**	.29**	.4**	.38**	.33**
Ethnocentrism	.48**	.34**	.21**	.43**	.53**
Generalised Prej	.38**	.31**	.19**	.29**	.40**
Agreeableness	-.26**	-.22**	-.06	-.18**	-.36**
Openness	-.15**	-.15**	-.01	-.12*	-.21**
Contact	-.24**	-.30**	-.20**	-.12*	-.04
Political Ideology	.40**	.30**	.24**	.34**	.36**

Note. $N = 427$. $*p < .05$ $**p < .01$.

Table D5.

Correlations Correlations for PPD Scale and Subscales and Antecedents in MHPs

	PPD	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
	r	*r*	*r*	*r*	*r*
SDO	.40**	.26**	.21**	.29**	.40**
RWA	.38**	.14*	.39**	.24**	.26**
Ethnocentrism	.47**	.29**	.34**	.34**	.37**
Generalised Prej	.16**	.10	.10	.09	.19**
Agreeableness	-.35**	-.30**	-.13*	-.28**	-.32**
Openness	-.22**	-.15**	-.15*	-.12**	-.13*
Contact	-.24**	-.32**	-.15**	-.14*	-.06
Political Ideology	.22**	.07	.16**	.22**	.19**

Note. $N = 299$. $*p < .05$ $**p < .01$.

Table D6.

Correlations for PPD Scale and Subscales and Antecedents in the General Population

	PPD	Fear/Avoidance	Unpredictability	Authoritarianism	Malevolence
	r	*r*	*r*	*r*	*r*
SDO	.51**	.40**	.20**	.39**	.53**
RWA	.44**	.28**	.26**	.34**	.41**
Ethnocentrism	.51**	.35**	.30**	.33**	.52**
Generalised Prej	.45**	.41**	.20**	.29**	.42**
Agreeableness	-.27**	-.24**	-.03	-.19**	-.35**
Openness	-.20**	-.13**	-.11*	-.15**	-.19**
Contact	-.28**	-.30**	-.10*	-.15**	-.58**
Political Ideology	.44**	.30**	.27**	.29**	.42**

Note. $N = 427$. $*p < .05$ $**p < .01$.

Appendix E

Supplementary Materials to Results – Regression Analysis

Table E1.

Summaries of Linear Regression Models Predicting Prejudice

		R		Adjusted R^2		F	
		Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PPMI	MHPs	.26	.59	.05	.32	4.10**	11.45**
	GenPop	.20	.70	.03	.47	3.40**	29.90**
PPS	MHPs	.17	.57	.01	.30	1.70	10.54**
	GenPop	.14	.62	.01	.36	1.60	19.12**
PPD	MHPs	.17	.62	.01	.35	1.81	13.24**
	GenPop	.21	.64	.03	.39	3.82**	21.43**

Note. Model 1 includes measure of age, gender, race, education and economic situation. Model 2 includes these demographic variables as well as SDO, RWA, ethnocentrism, generalised prejudice, agreeableness, openness to experience, contact and political ideology.

Table E2.

Semipartial (part) Correlations for Prejudiced Attitudes and Antecedents in MHPs and the General Population

		PPMI	PPS	PPD
SDO	MHPs	.18**	.15**	.19**
	GenPop	.13**	.14**	.14**
RWA	MHPs	.19**	.09	.14**
	GenPop	.07	.10*	.09*
Ethnocentrism	MHPs	.12*	.20**	.18**
	GenPop	.14**	.14**	.11**
Generalised Prejudice	MHPs	.01	.01	.00
	GenPop	.10**	.05	.11**
Agreeableness	MHPs	-.16**	-.09	-.17**
	GenPop	-.09*	-.07*	-.03
Openness	MHPs	-.03	-.16**	-.03
	GenPop	.03	.04	-.01
Contact	MHPs	-.18**	-.22**	-.17**
	GenPop	-.29**	-.23**	-.12**
Political Ideology	MHPs	-.11*	-.03	-.03
	GenPop	.00	.03	.05

Note. N = 299 for MHPs and N = 427 for GenPop. *p < .05 **p < .01. The p values of the semipartial correlations were obtained through hierarchical regression analysis with demographic variables in the first block and antecedents in the second block.

Appendix F

Supplementary Materials – Exploratory Analyses not Included in Paper

Comparison of Strength of Correlations between Antecedents and Prejudiced Attitudes. An exploratory analysis of the differences in strength of correlations between proposed antecedents and prejudice in each sample was conducted (Table XX). SDO, generalised prejudice and political ideology were significantly more correlated with prejudice towards people with MI, schizophrenia and depression in the general population than in MHPs. RWA and openness to experience were more strongly associated with attitudes towards people with schizophrenia in the general population than in MHPs. Ethnocentrism and contact were significantly more correlated with attitudes towards people with MI in the general population than in MHPs.

Table F1.

Comparison of Strength of Correlations between Antecedents and Attitudes in MHPs and General Population

	PPMI			PPS			PPD		
	MHPs	*GenPop*	*Diff*	*MHPs*	*GenPop*	*Diff*	*MHPs*	*GenPop*	*Diff*
SDO	.36**	.52**	.16**	.35**	.48**	.13*	.40**	.51**	.11*
RWA	.33**	.40**	.07	.30**	.41**	.11*	.38**	.44**	.06
Ethnocentrism	.40**	.53**	.13*	.43**	.48**	.05	.47**	.51**	.04
Generalised Prej	.13*	.46**	.33**	.14*	.38**	.24**	.16**	.45**	.29**
Agreeableness	-.32**	-.33**	.01	-.25**	-.26**	.01	-.35**	-.27**	.08
Openness	-.18**	-.17**	.01	-.29**	-.15**	.14*	-.22**	-.20**	.02
Contact	-.26**	-.45**	.19**	-.19**	-.24**	.05	-.24**	-.30**	.06
Political Ideology	.13*	.40**	.27**	.18**	.40**	.22**	.22**	.44**	.22**

Note. N = 299 for MHPs, N = 427 for GenPop. *p < .05 **p < .01. The p values of the difference in correlations was obtained according to calculations of Eid, Gollwitzer, and Schmitt (2011).

Profession-Related Variables. Also examined were differences according to workplace setting (Figure XX). No significant differences in prejudice were found according to workplace. Length of time working in the profession was significantly correlated with prejudiced attitudes, however, when age was controlled for length of time in profession did not predict any attitudes.

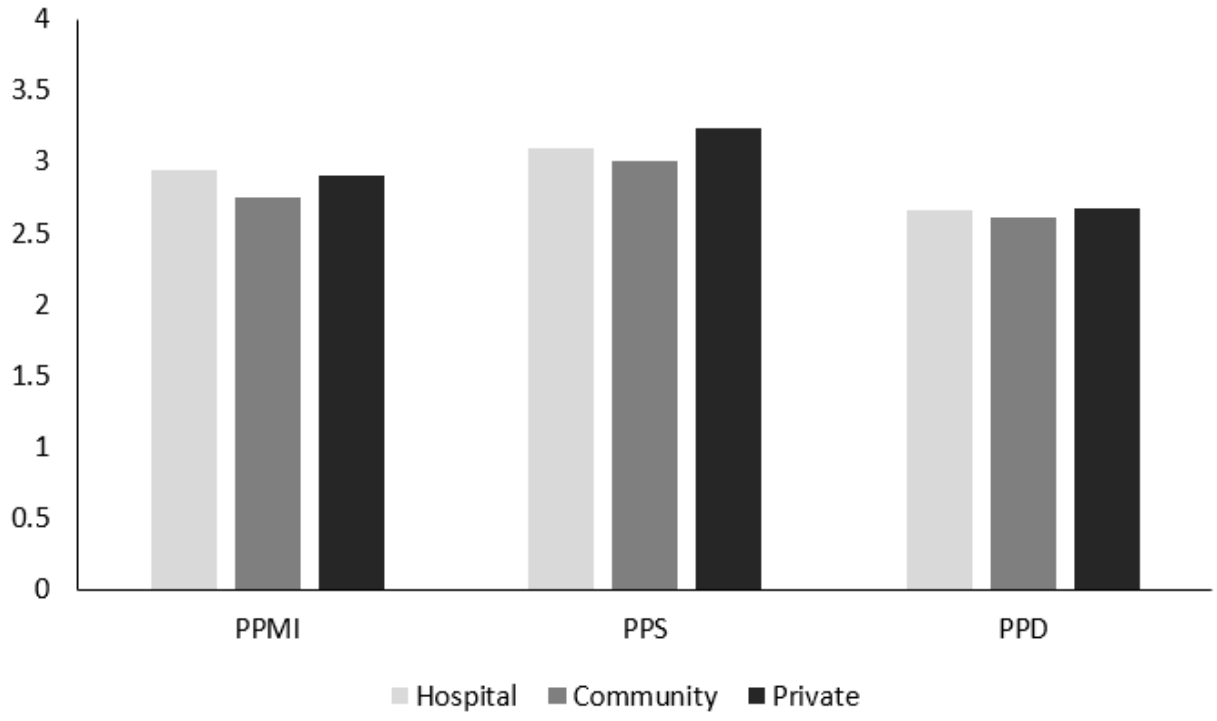

Figure F2. Mean Prejudice According to Workplace Setting.